EXHIBIT L

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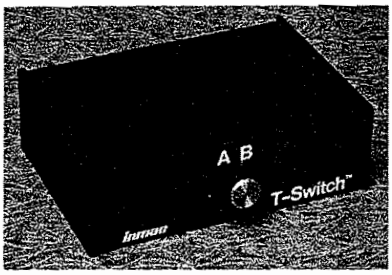
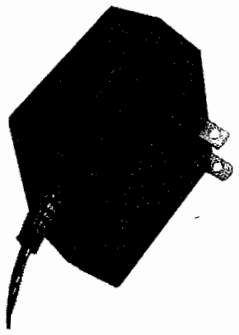


A/B switch box.



AC adapter.

accelerator \ak-sel´ər-ā`tər\ *n.* **1.** In applications, a key or key combination used to perform a defined function. *Also called* shortcut key. **2.** In hardware, a device that speeds or enhances the operation of one or more subsystems, leading to improved program performance. *See also* accelerator card, Windows-based accelerator.

accelerator board \ak-sel´ər-ā-tər bōrd`\ *n. See* accelerator card.

accelerator card \ak-sel´ər-ā-tər kärd´\ *n.* A printed circuit board that replaces or augments the computer's main microprocessor, resulting in faster performance. *Also called* accelerator board. *See also* expansion board, graphics accelerator.

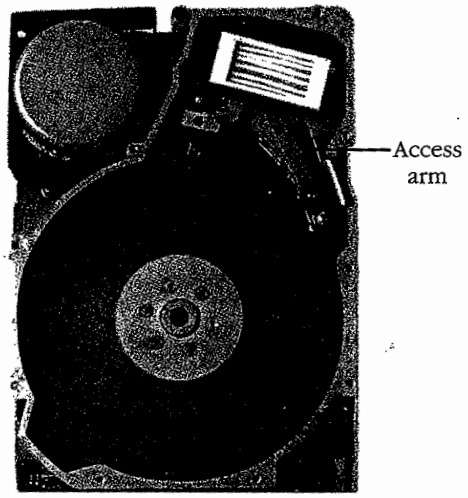
acceptable use policy \ak-sep`tə-bl yo͞os´ pol`ə-sē\ *n.* A statement issued by an Internet service provider or an online information service that indicates what activities users may or may not engage in while logged into the service. For example, some providers prohibit users from engaging in commercial activity on the network. *Acronym:* AUP (A`U-P´). *See also* ISP, online information service.

acceptance test \ak-sep´təns test`\ *n.* A formal evaluation of a hardware product performed by the customer, usually at the factory, to verify that the product is performing according to specifications.

access[1] \ak´ses\ *n.* **1.** The act of reading data from or writing data to memory. **2.** Connection to the Internet or other network or system.

access[2] \ak´ses\ *vb.* To gain entry to memory in order to read or write data.

access arm \ak´ses ärm`\ *n.* A mechanical arm that moves the read/write head(s) over the surface of a disk in a disk drive. See the illustration. *Also called* head arm.



Access arm.

ACCESS.bus \ak`ses-dot-bus´\ *n.* A bidirectional bus for connecting peripherals to a PC. The ACCESS.bus can connect up to 125 low-speed peripherals, such as printers, modems, mice, and keyboards, to the system through a single, general-purpose port. Peripherals that support the ACCESS.bus provide a connector or port connection that is similar to a phone-jack connector and are daisy-chained together. However, the PC communicates directly with each peripheral and vice versa. Connecting an ACCESS.bus device (for example, a printer) to a system results in the system automatically identifying and configuring it for

the particular host adapter used. *Acronym:* ASPI (A'S-P-I', a'spē). *See also* adapter, SCSI.

.ae \dot'A-E'\ *n.* On the Internet, the major geographic domain specifying that an address is located in United Arab Emirates.

.af \dot'A-F'\ *n.* On the Internet, the major geographic domain specifying that an address is located in Afghanistan.

AFDW \A'F-D-W'\ *n. See* Active Framework for Data Warehousing.

AFIPS \ā'fips\ *n.* Acronym for American Federation of Information Processing Societies. An organization formed in 1961 for the advancement of computing and information-related concerns. The U.S. representative of the International Federation of Information Processing. AFIPS was replaced by the Federation on Computing in the United States (FOCUS) in 1990.

AFK \A'F-K'\ *adv.* Acronym for away from keyboard. A phrase occasionally seen in live chat services on the Internet and online information services as an indication that one is momentarily unable to answer. *See also* chat[1] (definition 1).

.af.mil \dot-A-F'dot-mil', dot-A-F'dot-M-I-L'\ *n.* On the Internet, the major geographic domain specifying that an address belongs to the United States Air Force.

AFS \A'F-S'\ *n.* Acronym for Andrew File System. Carnegie-Mellon's distributed file system for facilitating accessibility to remote files in large networks.

.ag \dot'A-G'\ *n.* On the Internet, the major geographic domain specifying that an address is located in Antigua and Barbuda.

agent \ā'jənt\ *n.* **1.** A program that performs a background task for a user and reports to the user when the task is done or some expected event has taken place. **2.** A program that searches through archives or other repositories of information on a topic specified by the user. Agents of this sort are used most often on the Internet and are generally dedicated to searching a single type of information repository, such as postings on Usenet groups. Spiders are a type of agent used on the Internet. *Also called* intelligent agent. *See also* spider. **3.** In client/server applications, a process that mediates between the client and the server. **4.** In Simple Network Management Protocol (SNMP), a program that monitors network traffic. *See also* SNMP.

.ai \dot'A-I'\ *n.* On the Internet, the major geographic domain specifying that an address is located in Anguilla.

AI \A-I'\ *n. See* artificial intelligence.

.aiff \dot'A-I-F-F'\ *n.* The file extension that identifies audio files in the sound format originally used on Apple and Silicon Graphics (SGI) computers.

AIFF \A'I-F-F'\ *n.* The sound format originally used on Apple and Silicon Graphics (SGI) computers. AIFF stores waveform files in an 8-bit monaural format. *See also* waveform.

AIX \A'I-X'\ *n.* Acronym for Advanced Interactive Executive. A version of the UNIX system provided by IBM for its UNIX workstations and its PCs.

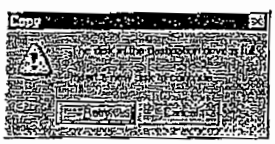
.ak.us \dot-A-K'dot-U-S'\ *n.* On the Internet, the major geographic domain specifying that an address is located in Alaska, United States.

.al \dot'A-L'\ *n.* On the Internet, the major geographic domain specifying that an address is located in Albania.

alarm \ə-lärm'\ *n.* A visual or auditory signal from a computer alerting the user to an error or hazardous situation.

alert \ə-lərt'\ *n.* **1.** On the Macintosh and in many graphical user interfaces, an audible or visual alarm that signals an error or represents a warning of some sort. *See also* alert box. **2.** In programming, an asynchronous notification sent by one thread to another. The alert interrupts the recipient thread at defined points in its execution and causes it to execute an asynchronous procedure call. *See also* asynchronous procedure call, thread (definition 1).

alert box \ə-lərt' boks'\ *n.* An on-screen box, in a graphical user interface, that is used to deliver a message or warning. An alert box from Windows. See the illustration. *Compare* dialog box.



Alert box.

PPP servers to validate the identity of the originator of a connection, upon connection or any time later. *Acronym:* CHAP (chap. C˝H-A-P˝). *See also* authentication, PPP.

change file \chānj´ fīl\ *n.* A file that records transactional changes occurring in a database, providing a basis for updating a master file and establishing an audit trail. *Also called* transaction log. *See also* addition record.

channel \chan´əl\ *n.* **1.** A path or link through which information passes between two devices. A channel can be either internal or external to a microcomputer. *See also* bus. **2.** In communications, a medium for transferring information. Depending on its type, a communications channel can carry information (data, sound, and/or video) in either analog or digital form. A communications channel can be a physical link, such as the cable connecting two stations in a network, or it can consist of some electromagnetic transmission on one or more frequencies within a bandwidth in the electromagnetic spectrum, as in radio and television, or in optical, microwave, or voice-grade communication. *Also called* circuit, line. *See also* analog, band, bandwidth, digital (definition 2), electromagnetic spectrum, frequency.

channel access \chan´əl ak˝ses\ *n.* **1.** A method used in networked systems to gain access to the data communication channel that links two or more computers. Common methods of channel access are contention, polling, and the token ring network. *See also* channel, contention, polling, token ring network. **2.** In wireless technology, an access method such as CDMA (Code Division Multiple Access). *See also* Code Division Multiple Access.

channel adapter \chan´əl ə-dap˝tər\ *n.* A device that enables hardware using two different types of communications channels to communicate.

channel capacity \chan´əl kə-pas˝ə-tē\ *n.* The speed at which a communications channel can transfer information, measured in bits per second (bps) or in baud.

channel hop \chan´əl hop˝\ *vb.* To switch repeatedly from one IRC channel to another. *See also* IRC.

channel op \chan´əl op˝\ *n.* Short for **channel operator.** A user on an IRC channel who has the privilege of expelling undesirable participants. *See also* IRC.

CHAP \chap. C˝H-A-P˝\ *n. See* Challenge Handshake Authentication Protocol.

character \kär´ək-tər\ *n.* A letter, number, punctuation mark, or other symbol or control code that is represented to a computer by one unit—1 byte—of information. A character is not necessarily visible, either on the screen or on paper; a space, for example, is as much a character as is the letter *a* or any of the digits 0 through 9. Because computers must manage not only so-called printable characters but also the look (formatting) and transfer of electronically stored information, a character can additionally indicate a carriage return or a paragraph mark in a word-processed document. It can be a signal to sound a beep, begin a new page, or mark the end of a file. *See also* ASCII, control character, EBCDIC.

character cell \kär´ək-tər sel˝\ *n.* A rectangular block of pixels that represents the space in which a given character is drawn on the screen. Computer displays use different numbers of pixels as character cells. Character cells are not always the same size for a given font, however; for proportionally spaced fonts, such as those commonly displayed on the Apple Macintosh, the height within a given font remains the same, but the width varies with each character.

character code \kär´ək-tər kōd˝\ *n.* A specific code that represents a particular character in a set, such as the ASCII character set. The character code for a given key depends on whether another key, such as Shift, is pressed at the same time. For example, pressing the A key alone normally generates the character code for a lowercase *a*. Pressing Shift plus the A key normally generates the character code for an uppercase *A*. *Compare* key code.

character definition table \kär´ək-tər def-ə-nish˝ən tā-bl\ *n.* A table of patterns that a computer can hold in memory and use as a reference for determining the arrangement of dots used to create and display bitmapped characters on the screen. *See also* bitmapped font.

character density \kär´ək-tər den˝sə-tē\ *n.* In printing or screen display, a measure of the number of characters per unit of area or of linear distance. *See also* pitch (definition 1).

flicts that lower the performance of the system, make some programs inoperable, or crash the computer. *See also* boot[1], crash[2] (definition 1), operating system.

clean install \klēn` in-stäl´\ *n.* Reinstallation of software in a manner that ensures that no application or system files from a previous installation will remain. The procedure prevents "smart" installer programs from skipping file installations where a file already exists, which could potentially keep a problem from being removed.

clean interface \klēn` in´tər-fās\ *n.* A user interface with simple features and intuitive commands. *See also* user interface.

clean room \klēn´ rōōm\ *n.* A room in which dust and other small particles are filtered from the air and in which protective clothing is worn to avoid contaminating electronic components and other delicate, sensitive equipment.

Clear key \klēr´ kē\ *n.* A key in the upper left corner of the numeric keypad on some keyboards. In many applications, it clears the currently selected menu choice or deletes the current selection.

Clear To Send \klēr` tə send´\ *n. See* CTS.

click \klik\ *vb.* To press and release a mouse button once without moving the mouse. Clicking is usually performed to select or deselect an item or to activate a program or program feature. *See also* right click. *Compare* double-click, drag.

clickable maps \klik`ə-bl maps´\ *n. See* image map.

click speed \klik´ spēd\ *n.* The maximum interval between the first and second time a user presses a button on a mouse or other pointing device that will still identify these actions as a double-click to the computer as opposed to two single-clicks. *See also* double-click, mouse, pointing device.

clickstream \klik´strēm\ *n.* The path a user takes while browsing a Web site. Each distinct selection made on a Web page adds one click to the stream. The further down the clickstream the user goes without finding the sought item, the more likely he or she is to depart to another Web site. Analysis of usage patterns helps Web site designers create user-friendly site structures, links, and search facilities. *See also* Web site.

client \klī´ənt\ *n.* **1.** In object-oriented programming, a member of a class (group) that uses the services of another class to which it is not related. *See also* inheritance (definition 1). **2.** A process, such as a program or task, that requests a service provided by another program—for example, a word processor that calls on a sort routine built into another program. The client process uses the requested service without having to "know" any working details about the other program or the service itself. *Compare* child (definition 1), descendant (definition 2). **3.** On a local area network or the Internet, a computer that accesses shared network resources provided by another computer (called a *server*). *See also* client/server architecture, server.

client error \klī´ənt âr`ər\ *n.* A problem reported by the Hypertext Transfer Protocol (HTTP) client module as the result of difficulty in interpreting a command or the inability to connect properly to a remote host.

client/server architecture \klī`ənt-sər-vər är´kə-tek-chur\ *n.* An arrangement used on local area networks that makes use of distributed intelligence to treat both the server and the individual workstations as intelligent, programmable devices, thus exploiting the full computing power of each. This is done by splitting the processing of an application between two distinct components: a "front-end" client and a "back-end" server. The client component is a complete, stand-alone personal computer (not a "dumb" terminal), and it offers the user its full range of power and features for running applications. The server component can be a personal computer, a minicomputer, or a mainframe that provides the traditional strengths offered by minicomputers and mainframes in a time-sharing environment: data management, information sharing between clients, and sophisticated network administration and security features. The client and server machines work together to accomplish the processing of the application being used. Not only does this increase the processing power available over older architectures but it also uses that power more efficiently. The client portion of the application is typically optimized for user interaction, whereas the server portion provides the centralized, multiuser functionality. *See also* distributed intelligence.

by enclosing them within a comment statement. *See also* comment, conditional compilation, nest.

commerce server \kom´ərs sər´vər\ *n.* An HTTP server designed for conducting online business transactions. Data is transferred between the server and Web browser in an encrypted form to keep information such as credit card numbers reasonably secure. Commerce servers are typically used by online stores and companies that are set up for mail order business. The wares or services offered by the store or company are described and displayed in photographs on the store or company Web site, and users can order directly from the site, using their Web browser. A number of companies market commerce servers, including Netscape, Microsoft, and Quarterdeck. *See also* HTTP server (definition 1), Secure Sockets Layer, Web browser.

commercial access provider \kə-mər´shəl ak´ses prə-vī´dər\ *n. See* ISP.

Commercial Internet Exchange \kə-mər´shəl in´tər-net eks-chānj´\ *n.* A nonprofit trade organization of public Internet service providers. In addition to the usual representational and social activities, CIX also operates an Internet backbone router that is accessible to its members. *Acronym:* CIX (C´I-X´). *See also* backbone (definition 1), ISP, router.

Common Access Method \kom´ən ak´ses meth´əd\ *n.* A standard developed by Future Domain and other SCSI vendors allowing SCSI adapters to communicate with SCSI peripherals regardless of the particular hardware used. *See also* SCSI.

common carrier \kom´ən kār´ē-ər\ *n.* A communications company (e.g., a telephone company) that provides service to the public and is regulated by governmental organizations.

Common Client Interface \kom´ən klī´ənt in´tər-fās\ *n.* A control interface begun with the X Windows version of NCSA Mosaic whereby other programs can control the local copy of a Web browser. The X Windows and Windows versions of NCSA Mosaic can communicate with other programs via TCP/IP. The Windows version is also capable of OLE communication. *Acronym:* CCI (C´C-I´). *See also* Mosaic, OLE, TCP/IP, X Window System.

Common Gateway Interface \kom´ən gāt´wā in´tər-fās\ *n. See* CGI (definition 1).

Common Hardware Reference Platform \kom´ən härd´wâr re´frəns plat´fōrm\ *n.* A specification describing a family of machines, based on the PowerPC processor, that are capable of booting multiple operating systems, including Mac OS, Windows NT, AIX, and Solaris. *Acronym:* CHRP (C´H-R-P´). *See also* PowerPC.

Common Internet File System \kom´ən in´tər-net fīl´ si´stəm\ *n.* A standard proposed by Microsoft that would compete directly with Sun Microsystems' Web Network File System. A system of file sharing of Internet or intranet files. *Acronym:* CIFS (C´I-F-S´).

Common LISP \kom´ən lisp´, L´I-S-P´\ *n.* Short for **Common** List Processing. A formalized and standardized version of the LISP programming language. Because LISP is in the public domain, a number of different versions of the language have evolved, and Common LISP was made a standard to give programmers a definitive source for LISP. *See also* LISP, programming language, standard (definition 1).

Common Object Request Broker Architecture \kom´ən ob-jekt rə-kwest´ brō-kər är´kə-tek-chur\ *n. See* CORBA.

Common User Access \kom´ən yōō-zər ak´ses\ *n.* A set of standards for management of user interfaces as part of IBM's Systems Application Architecture (SAA). Common User Access is designed to facilitate development of applications that are compatible and consistent across different platforms. *Acronym:* CUA (C´U-A´). *See also* standard (definition 1), user interface.

communications \kə-myōō-nə-kā´shənz\ *n.* The vast discipline encompassing the methods, mechanisms, and media involved in information transfer. In computer-related areas, communications involves data transfer from one computer to another through a communications medium, such as a telephone, microwave relay, satellite link, or physical cable. Two primary methods of computer communications exist: temporary connection of two computers through a switched network, such as the public telephone system, and permanent or semipermanent linking of multiple workstations or computers in a network. The line between the two is indistinct, however, because microcomputers equipped with modems are often used to access

both privately owned and public-access network computers. *See also* asynchronous transmission, CCITT, channel (definition 2), communications protocol, IEEE, ISDN, ISO/OSI model, LAN, modem, network, synchronous transmission. *Compare* data transmission, telecommunications, teleprocess.

Communications Act of 1934 \kə-myōō-nə-kā´-shənz akt əv nīn´tēn-thər-tē-fôr´\ *n. See* FCC.

communications channel \kə-myōō-nə-kā´shənz chan´əl\ *n. See* channel (definition 2).

communications controller \kə-myōō-nə-kā´-shənz kən-trō´lər\ *n.* A device used as an intermediary in transferring communications to and from the host computer to which it is connected. By relieving the host computer of the actual tasks of sending, receiving, deciphering, and checking transmissions for errors, a communications controller helps to make efficient use of the host computer's processing time—time that might be better used for noncommunications tasks. A communications controller can be either a programmable machine in its own right or a nonprogrammable device designed to follow certain communications protocols. *See also* front-end processor (definition 2).

communications link \kə-myōō-nə-kā´shənz lēnk´\ *n.* The connection between computers that enables data transfer.

communications network \kə-myōō-nə-kā´shənz net´wərk\ *n. See* network.

communications parameter \kə-myōō-nə-kā´-shənz pər-am´ə-tər\ *n.* Any of several settings required in order to enable computers to communicate. In asynchronous communications, for example, modem speed, number of data bits and stop bits, and type of parity are parameters that must be set correctly to establish communication between two modems.

communications port \kə-myōō-nə-kā´shənz pōrt´\ *n. See* COM (definition 1).

communications program \kə-myōō-nə-kā´shənz prō´gram\ *n.* A software program that enables a computer to connect with another computer and to exchange information. For initiating communications, communications programs perform such tasks as maintaining communications parameters, storing and dialing phone numbers automatically, recording and executing logon procedures, and repeatedly dialing busy lines. Once a connection is made, communications programs can also be instructed to save incoming messages on disk or to find and transmit disk files. During communication, these types of programs perform the major, and usually invisible, tasks of encoding data, coordinating transmissions to and from the distant computer, and checking incoming data for transmission errors.

communications protocol \kə-myōō-nə-kā´shənz prō´tə-kol\ *n.* A set of rules or standards designed to enable computers to connect with one another and to exchange information with as little error as possible. The protocol generally accepted for standardizing overall computer communications is a seven-layer set of hardware and software guidelines known as the OSI (Open Systems Interconnection) model. A somewhat different standard, widely used before the OSI model was developed, is IBM's SNA (Systems Network Architecture). The word *protocol* is often used, sometimes confusingly, in reference to a multitude of standards affecting different aspects of communication, such as file transfer (for example, XMODEM and ZMODEM), handshaking (for example, XON/XOFF), and network transmissions (for example, CSMA/CD). *See also* ISO/OSI model, SNA.

communications satellite \kə-myōō-nə-kā´shənz sat´ə-līt\ *n.* A satellite stationed in geosynchronous orbit that acts as a microwave relay station, receiving signals sent from a ground-based station (earth station), amplifying them, and retransmitting them on a different frequency to another ground-based station. Initially used for telephone and television signals, communications satellites can also be used for high-speed transmission of computer data. Two factors affecting the use of satellites with computers, however, are propagation delay (the time lag caused by the distance traveled by the signal) and security concerns. *See also* downlink, uplink.

communications server \kə-myōō-nə-kā´shənz sər´vər\ *n.* A gateway that translates packets on a local area network (LAN) into asynchronous signals, such as those used on telephone lines or in RS-232-C serial communications, and allows all nodes on the LAN access to its modems or

instead of by passing sequentially through all storage areas. For example, a disk drive is a DASD, but a tape unit is not, because, with a tape unit, the data is stored as a linear sequence. *See also* direct access. *Compare* sequential access.

.dat \dot-dat´, dot´D-A-T´\ *n.* A generic file extension for a data file.

DAT \dat, D´A-T´\ *n. See* digital audio tape, dynamic address translation.

data \dā´tə, dat´ə\ *n.* Plural of the Latin *datum*, meaning an item of information. In practice, *data* is often used for the singular as well as the plural form of the noun. *Compare* information.

data acquisition \dā´tə a-kwə-zi´shən, dat´ə\ *n.* The process of obtaining data from another source, usually one outside a specific system.

data aggregate \dā´tə a´grə-gət, dat´ə\ *n.* A collection of data records. It usually includes a description of the placement of the data blocks and their relation to the entire set.

data attribute \dā´tə a´tri-byo͞ot, dat´ə\ *n.* Structural information about data that describes its context and meaning.

data bank \dā´tə bank´, dat´ə\ *n.* Any substantial collection of data.

database \dā´tə-bās\ *n.* A file composed of records, each containing fields together with a set of operations for searching, sorting, recombining, and other functions.

database administrator \dā´tə-bās ad-min´-stra-tər\ *n.* One who manages a database. The administrator determines the content, internal structure, and access strategy for a database, defines security and integrity, and monitors performance. *Acronym:* DBA (D´B-A´). *Also called* database manager.

database analyst \dā´tə-bās an´ə-list\ *n.* One who provides the analytic functions needed to design and maintain applications requiring a database.

database designer \dā´tə-bās di-zī´nər\ *n.* One who designs and implements functions required for applications that use a database.

database engine \dā´tə-bās en´jən\ *n.* The program module or modules that provide access to a database management system (DBMS).

database machine \dā´tə-bās mə-shēn´\ *n.* **1.** A peripheral that executes database tasks, thereby relieving the main computer from performing them. **2.** A database server that performs only database tasks.

database management system \dā´tə-bās man´ij-mənt sis´təm\ *n.* A software interface between the database and the user. A database management system handles user requests for database actions and allows for control of security and data integrity requirements. *Acronym:* DBMS (D´B-M-S´). *Also called* database manager. *See also* database engine.

database manager \dā´tə-bās man´ə-jər\ *n. See* database administrator, database management system.

database publishing \dā´tə-bās pə´blə-shēng\ *n.* The use of desktop publishing or Internet technology to produce reports containing information obtained from a database.

database server \dā´tə-bās sər´vər\ *n.* A network node, or station, dedicated to storing and providing access to a shared database. *Also called* database machine.

database structure \dā´tə-bās struk´chur\ *n.* A general description of the format of records in a database, including the number of fields, specifications regarding the type of data that can be entered in each field, and the field names used.

data bit \dā´tə bit´, dat´ə\ *n.* In asynchronous communications, one of a group of from 5 to 8 bits that represents a single character of data for transmission. Data bits are preceded by a start bit and followed by an optional parity bit and one or more stop bits. *See also* asynchronous transmission, bit, communications parameter.

data buffer \dā´tə buf´ər, dat´ə\ *n.* An area in memory where data is temporarily stored while being moved from one location to another. *See also* buffer[1].

data bus \dā´tə bus´, dat´ə\ *n. See* bus.

data cable \dā´tə kā´bl, dat´ə\ *n.* Fiber-optic or wire cable used to transfer data from one device to another.

data capture \dā´tə kap´chur, dat´ə\ *n.* **1.** The collection of information at the time of a transaction. **2.** The process of saving on a storage medium a record of interchanges between a user and a remote information utility.

data carrier \dā´tə kar´ē-ər, dat´ə\ *n. See* carrier (definition 1).

addressing data and managing the flow of transmissions. It is the lowest of the three layers (data-link, network, and transport) involved in actually moving data between devices. *See also* ISO/OSI model.

data management \dā´tə man`əj-mənt, dat´ə\ *n.* The control of data from acquisition and input through processing, output, and storage. In microcomputers, hardware manages data by gathering it, moving it, and following instructions to process it. The operating system manages the hardware and ensures that the parts of the system work in harmony so that data is stored safely and accurately. Application programs manage data by receiving and processing input according to the user's commands, and sending results to an output device or to disk storage. The user also is responsible for data management by acquiring data, labeling and organizing disks, backing up data, archiving files, and removing unneeded material from the hard disk.

data manipulation \dā´tə mə-ni`pyə-lā`shən, dat´ə\ *n.* The processing of data by means of programs that accept user commands, offer ways to handle data, and tell the hardware what to do with the data.

data manipulation language \dā`tə mə-ni`pyə-lā´shən lang`wəj, dat´ə\ *n.* In database management systems, a language that is used to insert data in, update, and query a database. Data manipulation languages are often capable of performing mathematical and statistical calculations that facilitate generating reports. *Acronym:* DML (D`M-L´). *See also* structured query language.

data mart \dā´tə märt`, dat´ə\ *n.* A scaled-down version of a data warehouse that is tailored to contain only information likely to be used by the target group. *See also* data warehouse.

data medium \dā´tə mē`dē-um, dat´ə\ *n.* The physical material on which computer data is stored.

data migration \dā´tə mī-grā`shən, dat´ə\ *n.* **1.** The process of moving data from one repository or source, such as a database, to another, usually via automated scripts or programs. Often data migration involves transferring data from one type of computer system to another. **2.** In supercomputing applications, the process of storing large amounts of data offline while making them appear to be online as disk-resident files.

data mining \dā´tə mī`nēng, dat´ə\ *n.* The process of identifying commercially useful patterns or relationships in databases or other computer repositories through the use of advanced statistical tools.

data model \dā´tə mod`əl, dat´ə\ *n.* A collection of related object types, operators, and integrity rules that form the abstract entity supported by a database management system (DBMS). Thus, one speaks of a relational DBMS, a network DBMS, and so on, depending on the type of data model a DBMS supports. In general, a DBMS supports only one data model as a practical rather than a theoretical restriction.

data network \dā´tə net`wərk, dat´ə\ *n.* A network designed for transferring data encoded as digital signals, as opposed to a voice network, which transmits analog signals.

data packet \dā´tə pak`ət, dat´ə\ *n. See* packet.

data point \dā´tə point`, dat´ə\ *n.* Any pair of numeric values plotted on a chart.

data processing \dā`tə pros´es-ēng, dat`ə\ *n.* **1.** The general work performed by computers. **2.** More specifically, the manipulation of data to transform it into some desired result. *Acronym:* DP (D-P´). *Also called* ADP, automatic data processing, EDP, electronic data processing. *See also* centralized processing, decentralized processing, distributed processing.

Data Processing Management Association \dā`tə pros`es-ēng man´əj-mənt ə-sō-sē-ā`shən, dat`ə\ *n. See* DPMA.

data protection \dā`tə pro-tek´shən, dat`ə\ *n.* The process of ensuring the preservation, integrity, and reliability of data. *See also* data integrity.

data rate \dā´tə rāt`, dat´ə\ *n.* The speed at which a circuit or communications line can transfer information, usually measured in bits per second (bps).

data record \dā´tə rek`ərd, dat´ə\ *n. See* record[1].

data reduction \dā´tə rə-duk`shən, dat´ə\ *n.* The process of converting raw data to a more useful form by scaling, smoothing, ordering, or other editing procedures.

data segment \dā´tə seg`mənt, dat´ə\ *n.* The portion of memory or auxiliary storage that contains the data used by a program.

desktop enhancer \desk'top en-han'sər\ *n.* Software that adds functionality to a windows-based operating system such as Microsoft Windows or Mac OS—for example, an enhanced file browser, clipboard, or multimedia player.

Desktop file \desk'top fīl'\ *n.* A hidden file maintained on a particular volume (roughly equivalent to a disk) by the Macintosh operating system for storing information about the files on it, such as version data, lists of icons, and file references.

Desktop Management Interface \desk'top man'əj-mənt in'tər-fās\ *n.* *See* DMI.

desktop publishing \desk'top pu'bli-shēng\ *n.* The use of a computer and specialized software to combine text and graphics to create a document that can be printed on either a laser printer or a typesetting machine. Desktop publishing is a multiple-step process involving various types of software and equipment. The original text and illustrations are generally produced with software such as word processors and drawing and painting programs and with photograph-scanning equipment and digitizers. The finished product is then transferred to a page-makeup program, which is the software most people think of as the actual desktop publishing software. This type of program enables the user to lay out text and graphics on the screen and see what the results will be; for refining parts of the document, these programs often include word processing and graphics features in addition to layout capabilities. As a final step, the finished document is printed either on a laser printer or, for the best quality, by typesetting equipment.

desktop video \desk'top vid'ē-ō\ *n.* The use of a personal computer to display video images. The video images may be recorded on video tape or on a laser disc or may be live footage from a video camera. Live video images can be transmitted in digital form over a network in video conferencing. *Acronym:* DTV (D'T-V').

destination \de'stə-nā'shən\ *n.* The location (drive, folder, or directory) to which a file is copied or moved. *Compare* source (definition 1).

destructive read \dis-truk'tiv rēd'\ *n.* An attribute of certain memory systems, notably core systems. In a destructive read of a memory location, the data is passed on to the processor, but the copy in memory is destroyed by the process of reading. Destructive memory systems require special logic to rewrite data back to a memory location after it is read. *Also called* destructive readout. *See also* core. *Compare* nondestructive readout.

detail file \dē'tāl fīl'\ *n.* *See* transaction file.

detection \də-tek'shən'\ *n.* Discovery of a certain condition that affects a computer system or the data with which it works.

determinant \də-tər'mə-nənt'\ *n.* In database design theory, any attribute or combination of attributes on which any other attribute or combination of attributes is functionally dependent.

determinism \də-tər'mə-ni-zəm'\ *n.* In computing, the ability to predict an outcome or to know in advance how data will be manipulated by a processing system. A deterministic simulation, for example, is one in which a certain input always produces the same output.

developer's toolkit \də-vel'ə-pərz tōōl'kit\ *n.* A set of routines (usually in one or more libraries) designed to allow developers to more easily write programs for a given computer, operating system, or user interface. *See also* library (definition 1), toolbox.

development cycle \də-vel'əp-mənt sī'kl\ *n.* The process of application development from definition of requirements to finished product, including the following stages: analysis, design and prototyping, software coding and testing, and implementation.

device \də-vīs'\ *n.* A generic term for a computer subsystem. Printers, serial ports, and disk drives are often referred to as devices; such subsystems frequently require their own controlling software, called device drivers. *See also* device driver.

device address \də-vīs' a'dres, a-dres'\ *n.* A location within the address space of a computer's random access memory (RAM) that can be altered either by the microprocessor or by an external device. Device addresses are different from other locations in RAM, which can be altered only by the microprocessor. *See also* device, input, output, RAM.

device control character \də-vīs' kən-trōl' kar'ək-tər\ *n.* *See* control character.

device controller \də-vīs' kən-trō'lər\ *n.* *See* input/output controller.

dialect \dī´ə-lekt`\ *n.* A variant of a language or protocol. For example, Transact-SQL is a dialect of structured query language (SQL).

dialog \dī´ə-log`\ *n.* **1.** In computing, the exchange of human input and machine responses that forms a "conversation" between an interactive computer and the person using it. **2.** The exchange of signals by computers communicating on a network.

dialog box \dī´ə-log boks`\ *n.* In a graphical user interface, a special window displayed by the system or application to solicit a response from the user. *See also* windowing environment. *Compare* integrator.

dial-up \dīl´up\ *adj.* Of, pertaining to, or being a connection that uses the public switched telephone network rather than a dedicated circuit or some other type of private network.

dial-up access \dīl´up ak`ses\ *n.* Connection to a data communications network through a public switched telecommunication network.

dial-up service \dīl´up sər`vəs\ *n.* A telephone connection provider for a local or worldwide public switched telephone network that provides Internet or intranet access, advertisement via a Web page, access to news services, or access to the stock market and other resources.

DIB \D`I-B`\ *n.* **1.** Acronym for **device-independent bit map.** A file format designed to ensure that bitmapped graphics created using one application can be loaded and displayed in another application exactly the way they appeared in the originating application. *See also* bitmapped graphics. **2.** Acronym for **Directory Information Base.** A directory of user and resource names in an X.500 system. The DIB is maintained by a Directory Server Agent (DSA). *Also called* white pages.

DIBengine \D`I-B-en´jən\ *n.* Software, or a combination of hardware and software, that produces DIB files. *See also* DIB (definition 1).

dibit \dī´bit\ *n.* A set of 2 bits representing one of four possible combinations: 00, 01, 10, and 11. In communications, a dibit is a kind of transmission unit made possible by the modulation technique known as differential phase-shift keying, which encodes data by using four different states (phase shifts) in the transmission line to represent each of the four dibit combinations. *See also* phase-shift keying.

dichotomizing search \dī-kot`ə-mī-zēng sərch`\ *n. See* binary search.

DIF \D`I-F`\ *n. See* data interchange format.

difference \di´frəns, dif´ər-əns\ *n.* **1.** The amount by which two values differ. In electronics, differences in physical elements, such as waveforms or voltages, are used in the operation of circuits, amplifiers, multiplexers, communications equipment, and so on. **2.** In database management, it is an operator in relational algebra that is used in sorting record sets (tuples). For example, given two relational tables, A and B, that are union-compatible (contain the same number of fields, with corresponding fields containing the same types of values), the statement

DIFFERENCE A: B

builds a third relation containing all those records that appear in A but not in B. *See also* relational algebra, tuple. *Compare* intersect, union.

Difference Engine \dif´ər-əns en´jin, dif´rəns\ *n.* An early computerlike mechanical device designed by British mathematician and scientist Charles Babbage in the early 1820s. The Difference Engine was intended to be a machine with a 20-decimal capacity capable of solving mathematical problems. The concept of the Difference Engine was enhanced by Babbage in the 1830s in the design of his more famous Analytical Engine, a mechanical precursor of the electronic computer. *See also* Analytical Engine.

differential \dif`ər-en´shəl\ *adj.* In electronics, a reference to a type of circuit that makes use of the difference between two signals rather than the difference between one signal and some reference voltage.

differential phase-shift keying \dif-ər-en`shəl fāz`shift kē`ēng\ *n. See* phase-shift keying.

differentiator \dif`ər-en´shē-ā`tər\ *n.* A circuit whose output is the differential (first derivative) of the input signal. The differential measures how fast a value is changing, so the output of a differentiator is proportional to the instantaneous rate of change of the input signal. See the illustration on the next page. *Compare* integrator.

digest \dī´jest\ *n.* **1.** An article in a moderated newsgroup that summarizes multiple posts submitted to the moderator. *See also* moderator, newsgroup. **2.** A message in a mailing list that is sent to

conducting path. Electrostatic charges are used in copiers and laser printers to hold toner particles on a photoconducting drum and in flatbed plotters to hold the plot medium in place.

electrostatic discharge \ə-lek´trō-stat´ik dis´chärj\ *n.* The discharge of static electricity from an outside source, such as human hands, into an integrated circuit, often resulting in damage to the circuit. *Acronym:* ESD (E´S-D´).

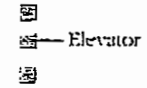
electrostatic plotter \ə-lek´trō-stat´ik plot´ər\ *n.* A plotter that creates an image from a dot pattern on specially coated paper. The paper is electrostatically charged and exposed to toner, which adheres to the dots. Electrostatic plotters can be up to 50 times faster than pen plotters but are more costly. Color models produce images through multiple passes with cyan, magenta, yellow, and black. *See also* plotter. *Compare* electrophotographic printers, pen plotter.

electrostatic printer \ə-lek´trō-stat´ik prin´tər\ *n.* *See* electrostatic plotter.

elegant \el´ə-gənt\ *adj.* Combining simplicity, terseness, efficiency, and subtlety. On the academic side of computer science, elegant design (say, of programs, algorithms, or hardware) is a priority, but in the frenetic pace of the computer industry, elegant design normally is sacrificed for the sake of speeding a product's development, frequently resulting in bugs that are difficult to correct.

element \el´ə-mənt\ *n.* **1.** Any stand-alone item within a broader context. For example, a data element is an item of data with the characteristics or properties of a larger set; a picture element (pixel) is one single dot on a computer screen or in a computer graphic; a print element is the part of a daisy-wheel printer that contains the embossed characters. *See also* daisy-wheel printer, data element, graphics primitive, pixel, thimble. **2.** In markup languages such as HTML and SGML, the combination of a set of tags, any content contained between the tags, and any attributes the tags may have. Elements can be nested, one within the other. *See also* attribute (definition 3), HTML, markup language, SGML.

elevator \el´ə-vā´tər\ *n.* The square box within a scroll bar that can be moved up and down to change the position of text or an image on the screen. See the illustration. *Also called* scroll box, thumb. *See also* scroll bar.



Elevator.

elevator seeking \el´ə-vā-tər sē´kēng\ *n.* A method of limiting hard disk access time in which multiple requests for data are prioritized based on the location of the data relative to the read/write head. This serves to minimize head movement. *See also* access time (definition 2), hard disk, read/write head.

elite \ē-lēt´, ā-lēt´, ə-lēt´\ *n.* **1.** A size of fixed-width type that prints 12 characters to the inch. **2.** A fixed-width font that may be available in various type sizes. *See also* monospace font.

ELIZA \ə-lī´zə\ *n.* A program, modeled on Rogerian psychotherapy, that conducts simulated conversations with humans by echoing responses and posing questions based on key words in earlier comments. It was created by Dr. Joseph Weizenbaum, who considered it a bit of a joke and was alarmed that people took it seriously.

ellipsis \ə-lip´sis\ *n.* A set of three dots (...) used to convey incompleteness. In many windowing applications, selection of a command that is followed by an ellipsis will produce a submenu or a dialog box. In programming and software manuals, an ellipsis in a syntax line indicates the repetition of certain elements. *See also* dialog box, syntax.

elm \elm\ *n.* Short for **electronic mail.** A program for reading and composing e-mail on UNIX systems. The elm program has a full-screen editor, making it easier to use than the original mail program, but elm has largely been superseded by pine. *See also* e-mail[1]. *Compare* Eudora, pine.

e-mail[1] or **E-mail** or **email** \ē´māl\ *n.* **1.** The exchange of text messages and computer files over a communications network, such as a local area network or the Internet, usually between computers or terminals. **2.** An electronic text message.

e-mail[2] or **E-mail** or **email** \ē´māl\ *vb.* To send an e-mail message.

e-mail address \ē´māl a`dres, ə-dres`\ *n.* A string that identifies a user so that the user can receive Internet e-mail. An e-mail address typically consists of a name that identifies the user to the mail server, followed by an at sign (@) and the host name and domain name of the mail server. For example, if Anne E. Oldhacker has an account on the machine called baz at Foo Enterprises, she might have an e-mail address aeo@baz.foo.com, which would be pronounced "A E O at baz dot foo dot com."

e-mail filter \ē´māl fil`tər\ *n.* A feature in e-mail–reading software that automatically sorts incoming mail into different folders or mailboxes based on information contained in the message. For example, all incoming mail from a user's Uncle Joe might be placed in a folder labeled "Uncle Joe." Filters may also be used either to block or accept e-mail from designated sources.

embedded \em-bed´əd\ *adj.* In software, pertaining to code or a command that is built into its carrier. For example, application programs insert embedded printing commands into a document to control printing and formatting. Low-level assembly language is embedded in higher-level languages, such as C, to provide more capabilities or better efficiency.

embedded command \em-bed`əd kə-mand´\ *n.* A command placed in a text, graphics, or other document file, often used for printing or page-layout instructions. Such commands often do not appear on screen but can be displayed if needed. In transferring documents from one program to another, embedded commands can cause problems if the programs are incompatible.

embedded controller \em-bed`əd kən-trō´lər\ *n.* A processor-based controller circuit board that is built into the computer machinery. *See also* controller.

embedded hyperlink \em-bed`əd hī´pər-lēnk\ *n.* A link to a resource that is embedded within text or is associated with an image or an image map. *See also* hyperlink, image map.

embedded interface \em-bed`əd in´tər-fās\ *n.* An interface built into a hardware device's drive and controller board so that the device can be directly connected to the computer's system bus. *See also* controller, interface (definition 3). *Compare* ESDI, SCSI, ST506 interface.

em dash \em´ dash\ *n.* A punctuation mark (—) used to indicate a break or interruption in a sentence. It is named for the em, a typographical unit of measure that in some fonts equals the width of a capital M. *Compare* en dash, hyphen.

EMF \E`M-F´\ *n. See* electromotive force.

emitter \ə-mit´ər, ē-mit´ər\ *n.* In transistors, the region that serves as a source of charge carriers. *Compare* base (definition 3), collector.

emitter-coupled logic \ə-mit`ər-kup-ld loj´ik, ē-mit`ər-\ *n.* A circuit design in which the emitters of two transistors are connected to a resistor so that only one of the transistors switches at a time. The advantage of this design is very high switching speed. Its drawbacks are the high number of components required and susceptibility to noise. *Acronym:* ECL (E`C-L´).

EMM \E`M-M´\ *n. See* Expanded Memory Manager.

e-money or **emoney** \ē´mən`ē\ *n.* Short for electronic **money.** A generic name for the exchange of money through the Internet. *Also called* cybercash, digicash, digital cash, e-cash.

emotag \ē´mō-tag`\ *n.* In an e-mail message or newsgroup article, a letter, word, or phrase that is encased in angle brackets and that, like an emoticon, indicates the attitude the writer takes toward what he or she has written. Often emotags have opening and closing tags, similar to HTML tags, that enclose a phrase or one or more sentences. For example: <joke>You didn't think there would really be a joke here, did you?</joke>. Some emotags consist of a single tag, such as <grin>. *See also* emoticon, HTML.

emoticon \ə-mō´ti-kon`\ *n.* A string of text characters that, when viewed sideways, form a face expressing a particular emotion. An emoticon is often used in an e-mail message or newsgroup post as a comment on the text that precedes it. Common emoticons include :-) or :) (meaning "I'm smiling at the joke here"), ;-) ("I'm winking and grinning at the joke here"), :-(("I'm sad about this"), :-7 ("I'm speaking with tongue in cheek"), :D or :-D (big smile; "I'm overjoyed"), and :-O (either a yawn of boredom or a mouth open in amazement). *Compare* emotag.

EMS \E`M-S´\ *n.* Acronym for **E**xpanded **M**emory **S**pecification. A technique for adding memory to

designated output destination. A database filter, for example, might flag information of a certain age. **2.** In communications and electronics, hardware or software that selectively passes certain elements of a signal and eliminates or minimizes others. A filter on a communications network, for example, must be designed to transmit a certain frequency but attenuate (dampen) frequencies above it (a low-pass filter), those below it (a highpass filter), or those above and below it (a bandpass filter). **3.** A pattern or mask through which data is passed to weed out specified items. For instance, a filter used in e-mail or in retrieving newsgroup messages can allow users to filter out messages from other users. *See also* e-mail filter, mask. **4.** In computer graphics, a special effect or production effect that is applied to bitmapped images; for example, shifting pixels within an image, making elements of the image transparent, or distorting the image. Some filters are built into a graphics program, such as a paint program or an image editor. Others are separate software packages that plug into the graphics program. *See also* bitmapped graphics, image editor, paint program.

filtering program \fil´tər-ĕng prō´gram\ *n.* A program that filters information and presents only results that match the qualifications defined in the program.

FilterKeys \fil´tər-kēz´\ *n.* A Windows 95 accessibility control panel feature that enables users with physical disabilities to use the keyboard. With FilterKeys, the system ignores brief and repeated keystrokes that result from slow or inaccurate finger movements. *See also* accessibility. *Compare* MouseKeys, ShowSounds, SoundSentry, StickyKeys, ToggleKeys.

Final-Form-Text DCA \fī´nəl-fōrm-tekst´ D-C-A´\ *n.* A standard in Document Content Architecture (DCA) for storing documents in ready-to-print form for interchange between dissimilar programs. A related standard is Revisable-Form-Text DCA (RFTDCA). *Acronym:* FFTDCA (F´F-T´D-C-A´). *See also* DCA (definition 1). *Compare* Revisable-Form-Text DCA.

find \fīnd\ *vb. See* search[2].

Finder \fīn´dər\ *n.* The standard interface to the Macintosh operating system, allowing the user to view the contents of directories (folders); to move, copy, and delete files; and to launch applications. Items in the system are often represented as icons, and a mouse or similar pointing device is used to manipulate these items. The Finder was the first commercially successful graphical user interface, and it helped launch a wave of interest in icon-based systems. *See also* MultiFinder.

finger[1] \fĭng´ər\ *n.* An Internet utility, originally limited to UNIX but now available on many other platforms, that enables a user to obtain information on other users who may be at other sites (if those sites permit access by finger). Given an e-mail address, finger returns the user's full name, an indication of whether or not the user is currently logged on, and any other information the user has chosen to supply as a profile. Given a first or last name, finger returns the logon names of users whose first or last names match.

finger[2] \fĭng´ər\ *vb.* To obtain information on a user by means of the finger program.

fingerprint reader \fĭng´-ər-print rē´dər\ *n.* A scanner that reads human fingerprints for comparison to a database of stored fingerprint images.

FIPS \fips, F´I-P-S´\ *n. See* Federal Information Processing Standards.

firewall \fīr´wāl\ *n.* A security system intended to protect an organization's network against external threats, such as hackers, coming from another network, such as the Internet. A firewall prevents computers in the organization's network from communicating directly with computers external to the network and vice versa. Instead, all communication is routed through a proxy server outside of the organization's network, and the proxy server decides whether it is safe to let a particular message or file pass through to the organization's network.

firmware \fərm´wâr\ *n.* Software routines stored in read-only memory (ROM). Unlike random access memory (RAM), read-only memory stays intact even in the absence of electrical power. Startup routines and low-level input/output instructions are stored in firmware. It falls between software and hardware in terms of ease of modification. *See also* RAM, ROM.

FIR port \F´I-R´ pōrt\ *n.* Short for **fast infrared port.** A wireless I/O port, most common on a portable computer, that exchanges data with an

is the U.S. Army phrase FUBAR (an acronym which, in discreet language, represents Fouled Up Beyond All Recognition/Repair). However, other origins have been claimed. *Compare* fred (definition 2).

footer \fo͝ot´ər\ *n.* One or more identifying lines printed at the bottom of a page. A footer may contain a folio (page number), a date, the author's name, and the document title. *Also called* running foot. *Compare* header (definition 1).

footprint \fo͝ot´print\ *n.* The surface area occupied by a personal computer or other device.

force \fōrs\ *vb.* In programming, to perform a particular action that would normally not occur. The term is most often used in the context of forcing data to be within a particular range of values—for example, forcing a divisor to be nonzero. *See also* cast.

foreground[1] \fōr´ground\ *adj.* Currently having control of the system and responding to commands issued by the user. *See also* multitasking. *Compare* background[1].

foreground[2] \fōr´ground\ *n.* **1.** The color of displayed characters and graphics. *Compare* background[2] (definition 1). **2.** The condition of the program or document currently in control and affected by commands and data entry in a windowing environment. *Compare* background[2] (definition 4).

fork[1] \fōrk\ *n.* One of the two parts of a file recognized by the Mac OS. A Macintosh file has a data fork and a resource fork. Most or all of a typical user-produced document is in the data fork; the resource fork usually contains application-oriented information, such as fonts, dialog boxes, and menus. *See also* data fork, resource fork.

fork[2] \fōrk\ *vb.* To initiate a child process in a multitasking system after a parent process has been started. *See also* multitasking.

FOR loop \fōr´ lo͞op\ *n.* A control statement that executes a section of code a specified number of times. Actual syntax and usage vary from language to language. In most cases, the value of an index variable moves through a range of values, being assigned a different (and usually consecutive) value each time the program moves through the section of code. *See also* iterative statement, loop[1] (definition 1). *Compare* DO loop.

form \fōrm\ *n.* **1.** A structured document with spaces reserved for entering information and often containing special coding as well. **2.** In some applications (especially databases), a structured window, box, or other self-contained presentation element with predefined areas for entering or changing information. A form is a visual "filter" for the underlying data it is presenting, generally offering the advantages of better data organization and greater ease of viewing. **3.** In optical media, a data storage format used in compact disc technology. **4.** In programming, a metalanguage (such as Backus-Naur form) used to describe the syntax of a language. *See also* Backus-Naur form.

formal language \fōr´məl lang´wəj\ *n.* A combination of syntax and semantics that completely defines a computer language. *See also* Backus-Naur form, semantics (definition 1), syntax.

formal logic \fōr´məl loj´ik\ *n.* A study of the logical expressions, sequences, and overall construction of a valid argument, without regard to the truth of the argument. Formal logic is used in proving program correctness.

format[1] \fōr´mat\ *n.* **1.** In general, the structure or appearance of a unit of data. **2.** The arrangement of data within a document file that typically permits the document to be read or written by a certain application. Many applications can store a file in a more generic format, such as plain ASCII text. **3.** The layout of data storage areas (tracks and sectors) on a disk. **4.** The order and types of fields in a database. **5.** The attributes of a cell in a spreadsheet, such as its being alphabetic or numeric, the number of digits, the use of commas, and the use of currency signs. **6.** The specifications for the placement of text on a page or in a paragraph.

format[2] \fōr´mat\ *vb.* **1.** To change the appearance of selected text or the contents of a selected cell in a spreadsheet. **2.** To prepare a disk for use by organizing its storage space into a collection of data "compartments," each of which can be located by the operating system so that data can be sorted and retrieved. When a previously used disk is formatted, any preexisting information on it is lost.

format bar \fōr´mat bär´\ *n.* A toolbar within an application used for modifying the format of the

GEOS \jē´ŏs, G´E-O-S´\ *n.* An operating system created by Geoworks (formerly Berkeley Softworks). GEOS is a compact, object-oriented GUI that can run on Apple, Commodore, and MS-DOS platforms.

geostationary \jē´ō-stā´shə-nâr-ē\ *adj.* *See* geosynchronous.

geosynchronous \jē´ō-sĭn´krə-nəs\ *adj.* Completing one revolution in the same time that the earth completes one rotation, as a communications satellite. *Also called* geostationary.

germanium \jər-mā´nē-um\ *n.* A semiconductor element (atomic number 32) that is used in some transistors, diodes, and solar cells but has been replaced by silicon in most applications. Germanium has a lower bias voltage than silicon but is more sensitive to heat (as in soldering).

get \get\ *n.* An FTP command that instructs the server to transfer a specified file to the client. *See also* FTP client, FTP commands, FTP server.

.gf \dot´G-F´\ *n.* On the Internet, the major geographic domain specifying that an address is located in French Guiana.

GFLOP \G´flop, G´F-L-O-P´\ *See* gigaflops.

.gh \dot´G-H´\ *n.* On the Internet, the major geographic domain specifying that an address is located in Ghana.

ghost[1] \gōst\ *n.* A dim, secondary image that is displaced slightly from the primary image on a video display (due to signal reflection in transmission) or on a printout (due to unstable printing elements).

ghost[2] \gōst\ *vb.* **1.** To produce a duplicate, such as duplicating an application in memory. *See also* screen saver. **2.** To display an option on a menu or on a submenu in faint type to show that it cannot be selected at the present time.

ghosting \gō´stĭng\ *n.* *See* burn in (definition 2).

.gi \dot´G-I´\ *n.* On the Internet, the major geographic domain specifying that an address is located in Gibraltar.

.gif \dot-gif´, -G´I-F´\ *n.* The file extension that identifies GIF bit map images. *See also* GIF.

GIF \gif\ *n.* **1.** Acronym for Graphics Interchange Format. A graphics file format developed by CompuServe and used for transmitting raster images on the Internet. An image may contain up to 256 colors, including a transparent color. The size of the file depends on the number of colors actually used. The LZW compression method is used to reduce the file size still further. *See also* raster graphics. **2.** A graphic stored as a file in the GIF format.

giga- \gig´ə, jig´ə\ *prefix* **1.** One billion (1,000 million, 10^9). **2.** In data storage, 1,024 × 1,048,576 (2^{40}) or 1,000 × 1,048,576. *See also* gigabyte, gigaflops, gigahertz, kilo-, mega-.

Gigabit Ethernet \gig´ə-bit ē´thər-net, jig´ə-bit\ *n.* The IEEE standard dubbed 802.3z, which includes support for transmission rates of 1,000 megabits per second (Mbps) over an Ethernet network. The usual Ethernet standard (802.3) supports only up to 100 Mbps. *Compare* Ethernet/802.3.

gigabits per second \gig´ə-bits pər sek´ənd, jig´ə-bits\ *n.* A measurement of data transfer speed, as on a network, in multiples of 1,073,741,824 (2^{30}) bits. *Acronym:* Gbps (G´B-P-S´).

gigabyte \gig´ə-bīt´, jig´ə-bīt´\ *n.* **1.** 1,024 megabytes (1,024 × 1,048,576 [2^{30}] bytes). **2.** One thousand megabytes (1,000 × 1,048,576 bytes). *Acronym:* GB (gig´ə-bīt´, jig´ə-bīt´, G-B´).

gigaflops \gig´ə-flops´, jig´ə-flops´\ *n.* A measure of computing performance: one billion (1,000 million) floating-point operations per second. *Acronym:* GFLOP (G´flop, G´F-L-O-P´). *See also* floating-point operation.

gigahertz \gig´ə-hərts´, jig´ə-hərts´\ *n.* Abbreviated GHz. A measure of frequency: one billion (1,000 million) cycles per second.

GIGO \gī´gō, G´I-G-O´\ *n.* *See* garbage in, garbage out.

GIS \G´I-S´\ *See* geographic information system.

GKS \G´K-S´\ *n.* *See* Graphical Kernel System.

.gl \dot´G-L´\ *n.* On the Internet, the major geographic domain specifying that an address is located in Greenland.

glare filter \glâr´ fil´tər\ *n.* A transparent mask placed over the screen of a video monitor to reduce or eliminate light reflected from its glass surface.

glitch \glich\ *n.* **1.** A problem, usually minor. **2.** A brief surge in electrical power.

global \glō´bəl\ *adj.* Pertaining to an entire document, file, or program rather than to a restricted segment of it. *Compare* local, local variable.

global group \glō´bəl grōōp´\ *n.* In Windows NT Advanced Server, a collection of user accounts

H-sync \H´sēnk\ *n. See* horizontal synchronization.

.ht \dot`H-T´\ *n.* On the Internet, the major geographic domain specifying that an address is located in Haiti.

.htm \dot`H-T-M´\ *n.* The MS-DOS/Windows 3.*x* file extension that identifies Hypertext Markup Language (HTML) files, most commonly used as Web pages. Because MS-DOS and Windows 3.*x* cannot recognize file extensions longer than three letters, the .html extension is truncated to three letters in those environments. *See also* HTML.

.html \dot`H-T-M-L´\ *n.* The file extension that identifies Hypertext Markup Language (HTML) files, most commonly used as Web pages. *See also* HTML.

HTML \H`T-M-L´\ *n.* Acronym for **H**ypertext **M**arkup **L**anguage. The markup language used for documents on the World Wide Web. HTML is an application of SGML that uses tags to mark elements, such as text and graphics, in a document to indicate how Web browsers should display these elements to the user and should respond to user actions such as activation of a link by means of a key press or mouse click. HTML 2.0, defined by the Internet Engineering Task Force (IETF), includes features of HTML common to all Web browsers as of 1995 and was the first version of HTML widely used on the World Wide Web. Future HTML development will be carried out by the World Wide Web Consortium (W3C). HTML 3.2, the latest proposed standard, incorporates features widely implemented as of early 1996. Most Web browsers, notably Netscape Navigator and Internet Explorer, recognize HTML tags beyond those included in the present standard. *See also* .htm, .html, SGML, tag (definition 3), Web browser.

HTML+ \H`T-M-L-plus´\ *n.* An unofficial specification for enhancements to the original HTML, such as forms and tables. HTML+ was not adopted as a standard but influenced the HTML 2.0 and HTML 3.2 standards. *See also* HTML.

HTML 2.0 \H`T-M-L` tōō`point-O´\ *n.* A revised version of the HTML specification that added the capability for forms and eliminated certain little-used tags. Produced as an Internet Draft in mid-1994, HTML 2.0 represented common practice among browser developers at the time. It was standardized as an RFC in November 1995. *See also* HTML, HTML 3.0, HTML 3.2, HTML+, RFC.

HTML 3.0 \H`T-M-L` thrē`point-O´\ *n.* A revised version of the HTML specification. Its primary enhancement to HTML 2.0 is the support of tables. HTML 3.0 was never standardized or fully implemented by a major browser developer. *See also* HTML, HTML 2.0, HTML 3.2, HTML+.

HTML 3.2 \H`T-M-L` thrē`point-tōō´\ *n.* A World Wide Web Consortium (W3C) recommendation for an HTML standard that supersedes the proposed HTML 3.0 standard and adds features to HTML 2.0 such as applets, sub- and superscripts, tables, and text flow around images. *See also* HTML, HTML 2.0, HTML 3.0.

HTML document \H`T-M-L` dok´yə-mənt\ *n.* **1.** A hypertext document that has been coded with HTML. **2.** *See* Web page.

HTML editor \H`T-M-L´ ed`ə-tər\ *n.* A software program used to create and modify HTML documents (Web pages). Most HTML editors include a method for inserting HTML tags without actually having to type out each tag. A number of HTML editors will also automatically reformat a document with HTML tags, based on formatting codes used by the word processing program in which the document was created. *See also* tag (definition 3), Web page.

HTML page \H`T-M-L´ pāj\ *n. See* Web page.

HTML tag \H`T-M-L´ tag`\ *n. See* tag (definition 3).

HTML validation service \H`T-M-L` val-ə-dā´shən sər`vis\ *n.* A service used to confirm that a Web page uses valid HTML according to the latest standard and/or that its hyperlinks are valid. An HTML validation service can catch small syntactical errors in HTML coding as well as deviations from the HTML standards. *See also* HTML.

HTTP \H`T-T-P´\ *n.* Acronym for **H**ypertext **T**ransfer **P**rotocol. The client/server protocol used to access information on the World Wide Web. *See also* URL.

HTTPd \H`T-T-P-D´\ *n.* Short for **H**ypertext **T**ransfer **P**rotocol **D**aemon. A small, fast HTTP server available free from NCSA. *See also* HTTP server, NCSA (definition 1).

HTTP Next Generation \H`T-T-P` nekst` jen`ər-ā´shən\ *n. See* HTTP-NG.

intentionally written with no explicit termination condition but will terminate as a result of side effects or direct intervention. *See also* loop[1] (definition 1), side effect.

infix notation \in´fiks nō-tā´shən\ *n.* A notation, used for writing expressions, in which binary operators appear between their arguments, as in 2 + 4. Unary operators usually appear before their arguments, as in −1. *See also* operator precedence, postfix notation, prefix notation, unary operator.

infobahn \in´fō-bān´\ *n.* The Internet. *Infobahn* is a mixture of the terms *information* and *Autobahn*, a German highway known for the high speeds at which drivers can legally travel. *Also called* Information Highway, Information Superhighway, the Net.

information \in´fər-mā´shən\ *n.* The meaning of data as it is intended to be interpreted by people. Data consists of facts, which become information when they are seen in context and convey meaning to people. Computers process data without any understanding of what the data represents.

Information Analysis Center \in-fər-mā´shən ə-nal´ə-sis sen´tər\ *n. See* IAC.

information center \in-fər-mā´shən sen´tər\ *n.* 1. A large computer center and its associated offices; the hub of an information management and dispersal facility in an organization. 2. A specialized type of computer system dedicated to information retrieval and decision-support functions. The information in such a system is usually read-only and consists of data extracted or downloaded from other production systems.

information engineering \in-fər-mā´shən en-jə-nēr´ēng\ *n. See* IE (definition 1).

information explosion \in-fər-mā´shən eks-plō´zhən\ *n.* 1. The current period in human history, in which the possession and dissemination of information has supplanted mechanization or industrialization as a driving force in society. 2. The rapid growth in the amount of information available today. *Also called* information revolution.

information hiding \in-fər-mā´shən hī´dēng\ *n.* A design practice in which implementation details for both data structures and algorithms within a module or subroutine are hidden from routines using that module or subroutine, so as to ensure that those routines do not depend on some particular detail of the implementation. In theory, information hiding allows the module or subroutine to be changed without breaking the routines that use it. *See also* break, module, routine, subroutine.

Information Highway or **information highway** \in´fər-mā-shən hī´wā\ *n. See* Information Superhighway.

information kiosk \in´fər-mā´shən kē´osk\ *n. See* kiosk.

information management \in-fər-mā´shən man´əj-mənt\ *n.* The process of defining, evaluating, safeguarding, and distributing data within an organization or a system.

information packet \in´fər-mā´shən pak´ət\ *n. See* packet.

information processing \in-fər-mā´shən pros´es-ēng\ *n.* The acquisition, storage, manipulation, and presentation of data, particularly by electronic means.

information resource management \in-fər-mā´shən rē´sōrs man´əj-mənt\ *n.* The process of managing the resources for the collection, storage, and manipulation of data within an organization or system.

information retrieval \in-fər-mā´shən rē-trē´vəl\ *n.* The process of finding, organizing, and displaying information, particularly by electronic means.

information revolution \in-fər-mā´shən rev-ə-lōō´shən\ *n. See* information explosion.

information science \in-fər-mā´shən sī´əns\ *n.* The study of how information is collected, organized, handled, and communicated. *See also* information theory.

Information Services \in´fər-mā-shən sər´və-sez\ *n.* The formal name for a company's data processing department. *Acronym:* IS (I-S´). *Also called* Data Processing, Information Processing, Information Systems, Information Technology, Management Information Services, Management Information Systems.

Information Superhighway \in-fər-mā´shən sōō´pər-hī´wā\ *n.* The existing Internet and its general infrastructure, including private networks, online services, and so on. *See also* National Information Infrastructure.

Information Systems \in-fər-mā´shən sis´təmz\ *n. See* Information Services.

LLC \L`L-C´\ *n.* *See* IEEE 802 standards.

load[1] \lōd\ *n.* **1.** The total computing burden a system carries at one time. **2.** In electronics, the amount of current drawn by a device. **3.** In communications, the amount of traffic on a line.

load[2] \lōd\ *vb.* To place information from storage into memory for processing, if it is data, or for execution, if it is program code.

load-and-go \lōd`ənd-gō´\ *adj.* In reference to a routine, able to begin execution immediately, once loaded. The term is commonly used in reference to compilers and the machine code they generate.

loaded line \lō`dəd līn´\ *n.* A transmission cable fitted with loading coils, usually spaced about a mile apart, that reduce amplitude distortion in a signal by adding inductance (resistance to changes in current flow) to the line. Loaded lines minimize distortion within the range of frequencies affected by the loading coils, but the coils also reduce the bandwidth available for transmission.

loader \lō´dər\ *n.* A utility that loads the executable code of a program into memory for execution. On most microcomputers, the loader is an invisible part of the operating system and is automatically invoked when a program is run. *See also* load module, loader routine.

loader routine \lō´dər rōō-tēn`\ *n.* A routine that loads executable code into memory and executes it. A loader routine can be part of an operating system or it can be part of the program itself. *See also* loader, overlay[1] (definition 1).

load module \lōd´ moj`ōōl, mo`dyōōl\ *n.* An executable unit of code loaded into memory by the loader. A program consists of one or more load modules, each of which can be loaded and executed independently. *See also* loader.

load point \lōd´ point\ *n.* The beginning of the valid data area on a magnetic tape.

load sharing \lōd´ shâr`ēng\ *n.* A method of managing one or more tasks, jobs, or processes by scheduling and simultaneously executing portions of them on two or more microprocessors.

local \lō´kəl\ *adj.* Close at hand or restricted to a particular area. More specifically, in communications, a local device is one that can be accessed directly rather than by means of a communications line. In information processing, a local operation is one performed by the computer at hand rather than by a remote computer. In programming, a local variable is a variable that is restricted in scope, that is, used in only one part (subprogram, procedure, or function) of a program. *Compare* remote.

local area network \lō`kəl âr`ē-ə net´wərk\ *n.* *See* LAN.

local bus \lō`kəl bus´\ *n.* A PC architecture designed to speed up system performance by allowing some expansion boards to communicate directly with the microprocessor, bypassing the normal system bus entirely. *See also* PCI local bus, VL bus.

local bypass \lō`kəl bī´pas\ *n.* A telephone connection used by some businesses that links separate buildings but bypasses the telephone company.

local group \lō`kəl grōōp´\ *n.* **1.** In Windows NT, a group that is granted permissions and rights to only those resources on the workstation on which the group resides. Local groups provide a convenient means of allowing users both inside and outside the workstation to use resources found only on the workstation containing the local group. *See also* group[1]. **2.** In Windows NT Advanced Server, a group that is granted permissions and rights to only the resources on the servers of its own domain. Local groups in this context provide a convenient means of allowing users from both inside and outside the domain to use resources found only on the servers of the domain. *See also* global group, group[1].

localhost \lō´kəl-hōst`\ *n.* The name that is used to represent the same computer on which a TCP/IP message originates. An IP packet sent to localhost has the IP address 127.0.0.1 and does not actually go out to the Internet. *See also* IP address, packet (definition 1), TCP/IP.

localization \lō`kə-lə-zā´shən\ *n.* The process of altering a program so that it is appropriate for the area in which it is used. For example, the developers of a word processing program must localize the sorting tables in the program for different countries or languages because the correct order of characters in one language might be incorrect in another.

window on the screen. Because it is deliberately designed as a stand-alone unit that can work with other sections of the program, the same module might be able to perform the same task in another program as well, thus saving time in development and testing.

modular jack \mo´dyə-lər jak´, moj´ə-lər\ *n. See* phone connector.

modular programming \moj´ə-lər prō´gram-ēng, mo´dyə-lər\ *n.* An approach to programming in which the program is broken into several independently compiled modules. Each module exports specified elements (constants, data types, variables, functions, procedures); all other elements remain private to the module. Other modules can use only the exported elements. Modules clarify and regularize the interfaces among the major parts of a program. Thus, they facilitate group programming efforts and promote reliable programming practices. Modular programming is a precursor of object-oriented programming. *See also* module (definition 1), object-oriented programming.

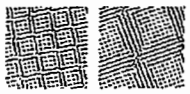
modulate \moj´ə-lāt´, mo´dyə-lāt´\ *vb.* To change some aspect of a signal intentionally, usually for the purpose of transmitting information.

modulation \moj´ə-lā´shən, mo´dyə-lā´shən\ *n.* **1.** The process of changing or regulating the characteristics of a carrier wave vibrating at a certain amplitude (height) and frequency (timing) so that the variations represent meaningful information. **2.** In computer communications, the means by which a modem converts digital information sent by a computer to the audio form that it sends over a telephone line.

module \moj´o͞ol, mo´dyo͞ol\ *n.* **1.** In programming, a collection of routines and data structures that performs a particular task or implements a particular abstract data type. Modules usually consist of two parts: an interface, which lists the constants, data types, variables, and routines that can be accessed by other modules or routines, and an implementation, which is private (accessible only to the module) and which contains the source code that actually implements the routines in the module. *See also* abstract data type, information hiding, Modula-2, modular programming. **2.** In hardware, a self-contained component that can provide a complete function to a system and can be interchanged with other modules that provide similar functions. *See also* memory card, SIMM.

modulo \moj´ə-lō´, mod´yə-lō´\ *n.* An arithmetic operation whose result is the remainder of a division operation. For example, 17 *modulo* 3 = 2 because 17 divided by 3 yields a remainder of 2. Modulo operations are used in programming.

moiré \mwär-ā´\ *n.* A visible wavy distortion or flickering in an image that is displayed or printed with an inappropriate resolution. Several parameters affect moiré patterns, including the size and resolution of the image, resolution of the output device, and halftone screen angle. See the illustration.



Moiré.

molecular beam epitaxy \mə-le´kyə-lər bēm ep´ə-tak-sē\ *n.* A process used in the fabrication of semiconductor devices, such as integrated circuits. A device employing molecular beam epitaxy creates thin layers of semiconducting material by vaporizing the material and then directing a beam of molecules at the substrate on which the layer is to be formed. This technique allows very precise and very thin layers to be created.

monadic \mə-na´dik´\ *adj. See* unary.

monitor \mon´i-tər´\ *n.* The device on which images generated by the computer's video adapter are displayed. The term *monitor* usually refers to a video display and its housing. The monitor is attached to the video adapter by a cable. *See also* CRT.

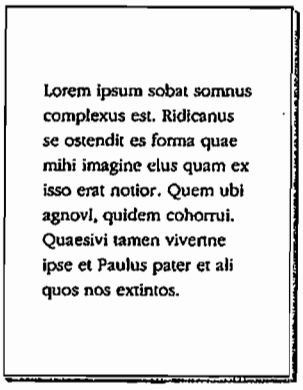
monochrome \mon´ə-krōm´\ *adj.* Of, pertaining to, or being a monitor that displays images in only one color—black on white (as on early monochrome Macintosh screens) or amber or green on black (as on early IBM and other monochrome monitors). The term is also applied to a monitor that displays only variable levels of a single color, such as a gray-scale monitor.

monochrome adapter \mon´ə-krōm ə-dap´tər\ *n.* A video adapter capable of generating a video signal for one foreground color or sometimes for a range of intensities in a single color, as for a gray-scale monitor.

a single port. Although several devices might be connected, only one can use the port at any given moment.

port number \pōrt´ num`bər\ *n.* A number that enables IP packets to be sent to a particular process on a computer connected to the Internet. Some port numbers, called "well-known" port numbers, are permanently assigned; for example, e-mail data under SMTP goes to port number 25. A process such as a telnet session receives an "ephemeral" port number when it starts; data for that session goes to that port number, and the port number goes out of use when the session ends. A total of 65,535 port numbers are available for use with TCP, and the same number are available for UDP. *See also* IP, Simple Mail Transfer Protocol, socket (definition 1), TCP, UDP. *Compare* IP address.

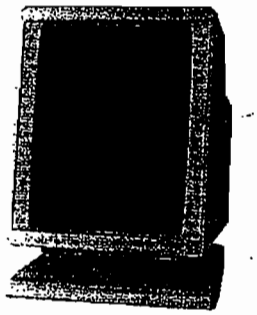
portrait mode \pōr´trət mōd`\ *n.* A vertical print orientation in which a document is printed across the narrower dimension of a rectangular sheet of paper. This is the print mode typical of most letters, reports, and other such documents. See the illustration. *Compare* landscape mode.



Portrait mode.

portrait monitor \pōr´trət mon`i-tər\ *n.* A monitor with a screen shape higher than it is wide. The proportions (but not necessarily the size) of the screen are usually the same as for a sheet of 8½-by-11-inch paper. See the illustration. *Compare* landscape monitor.

POS \P`O-S´\ *n.* Acronym for **p**oint **o**f **s**ale. The place in a store at which goods are paid for. Computerized transaction systems, such as those in use at automated supermarkets, use scanners for reading tags and bar codes, electronic cash registers, and other special devices to record purchases at this point.



Portrait monitor.

POSIT \poz´it, P`O-S-I-T´\ *n.* Acronym for **P**rofiles for **O**pen **S**ystems **I**nternetworking **T**echnology. A set of nonmandatory standards for U.S. government network equipment. POSIT, which recognizes the prevalence of TCP/IP, is the successor to GOSIP. *See also* GOSIP, TCP/IP.

positional notation \pə-zish`ə-nəl nō-tā´shən\ *n.* In mathematics, a form of notation whose meaning relies in part on the relative location of the elements involved. For example, common numeric notation is positional notation. In the decimal number 34, the position of the numeral 3 signifies three 10s and the position of the numeral 4 signifies four 1s.

POSIX \pō´siks, P`O-S`I-X´\ *n.* Acronym for **P**orta**b**le **O**perating **S**ystem **I**nterface for UNI**X**. An IEEE standard that defines a set of operating-system services. Programs that adhere to the POSIX standard can be easily ported from one system to another. POSIX was based on UNIX system services, but it was created in a way that allows it to be implemented by other operating systems.

post \pōst\ *vb.* To submit an article in a newsgroup or other online conference. The term is derived from the "posting" of a notice on a physical bulletin board. *See also* newsgroup.

POST \pōst\ *n. See* power-on self test.

posterization \pō`stər-ə-zā´shən\ *n. See* contouring.

database. *See also* primary key, secondary key. **2.** The value that is to be searched for in a document or any collection of data.

search string \sərch´ strēng\ *n.* The string of characters to be matched in a search—typically (but not necessarily) a text string.

seat[1] \sēt\ *n.* One workstation or computer, in the context of software licensing on a per-seat basis. *See also* license agreement, workstation (definition 1).

seat[2] \sēt\ *vb.* To insert a piece of hardware fully and position it correctly in a computer or affiliated equipment, as in seating a single inline memory module (SIMM) in its socket.

secondary channel \sek`ən-dâr-ē chan´əl\ *n.* A transmission channel in a communications system that carries testing and diagnostic information rather than actual data. *Compare* primary channel.

secondary key \sek´ən-dâr-ē kē`\ *n.* A field that is to be sorted or searched within a subset of the records having identical primary key values. *See also* alternate key (definition 1), candidate key. *Compare* primary key.

secondary service provider \sek´ən-dâr-ē sər´vis prə-vī`dər\ *n.* An Internet service provider that provides a Web presence but not direct connectivity. *See also* ISP.

secondary storage \sek`ən-dâr`ē stōr´əj\ *n.* Any data storage medium other than a computer's random access memory (RAM)—typically tape or disk. *Compare* primary storage.

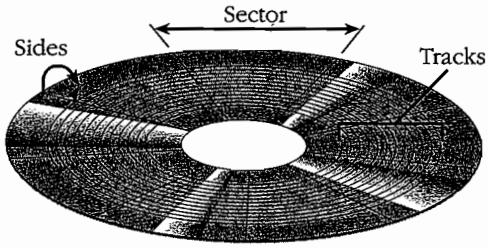
second normal form \sek`ənd nōr´məl fōrm`\ *n. See* normal form (definition 1).

secret channel \sē`krət chan´əl\ *n. See* private channel.

sector \sek´tər\ *n.* A portion of the data storage area on a disk. A disk is divided into sides (top and bottom), tracks (rings on each surface), and sectors (sections of each ring). Sectors are the smallest physical storage units on a disk and are of fixed size; typically, they are capable of holding 512 bytes of information apiece. See the illustration.

sector interleave \sek´tər in`tər-lēv\ *n. See* interleave.

sector map \sek´tər map`\ *n.* **1.** A map that indicates the unusable sectors on a disk. **2.** A table used to translate the sector numbers that are requested by the operating system into physical



Sector.

sector numbers. The sector map represents a different method of performing sector interleaving. When a sector map is used, the sectors are formatted on the disk in sequential order. The mapping enables the system to read sectors in a nonsequential order. For example, using a 3-to-1 sector interleaving map, a system request for sectors 1 through 4 will result in the disk driver reading physical sectors 1, 4, 7, and 10. *See also* interleave.

secure channel \se-kyər` chan´əl\ *n.* A communications link that has been protected against unauthorized access, operation, or use by means of isolation from the public network, encryption, or other forms of control. *See also* encryption.

Secure Electronics Transactions protocol \sə-kyər` ə-lek-tron´iks tranz-ak`shənz prō`tə-kol\ *n.* Protocol for conducting secure transactions on the Internet, the result of a joint effort by GTE, IBM, MasterCard, Microsoft, Netscape, SAIC, Terisa Systems, VeriSign, and Visa. *Acronym:* SET (S`E-T´).

Secure Hash Algorithm \sə-kyər` hash` al´gə-ridh`əm, se-kyŏr`\ *n. See* SHA.

Secure HTTP \se-kyər` H`T-T-P´\ *n. See* S-HTTP.

Secure Hypertext Transfer Protocol \se-kyər` hī`pər-tekst trans´fər pro`tə-kol\ *n. See* S-HTTP.

Secure/Multipurpose Internet Mail Extensions \se-kyər` mul`tē-pur-pəs in`tər-net māl´ eksten`shənz, mul`tī-pur-pəs\ *n. See* S/MIME.

secure site \sə-kyər` sīt´\ *n.* A Web site having the capability of providing secure transactions, ensuring that credit card numbers and other personal information will not be accessible to unauthorized parties.

Secure Sockets Layer \se-kyər` sok´əts lā`ər, lâr`\ *n.* A proposed open standard developed by Netscape Communications for establishing a secure

communications channel to prevent the interception of critical information, such as credit card numbers. The primary purpose of Secure Sockets Layer is to enable secure electronic financial transactions on the World Wide Web, although it is designed to work with other Internet services as well. This technology, which uses public key encryption, is incorporated into the Netscape Navigator Web browser and Netscape's commerce servers. *Acronym:* SSL (S`S-L´). *See also* commerce server, open standard, public key encryption. *Compare* S-HTTP.

Secure Transaction Technology \se-kyər` tranz-ak`shən tek-nol´ə-jē\ *n.* The use of the Secure Sockets Layer (SSL), Secure HTTP (S-HTTP), or both in online transactions, such as form transmission or credit card purchases. *Acronym:* STT (S`T-T´). *See also* Secure Sockets Layer, S-HTTP.

secure wide area network \se-kyər` wīd` âr`ē-ə net´wərk\ *n.* A set of computers that communicate over a public network, such as the Internet, but use security measures, such as encryption, authentication, and authorization, to prevent their communications from being intercepted and understood by unauthorized users. *Acronym:* S/WAN (swän, S´wan, S`-W-A-N´). *See also* authentication, authorization, encryption, virtual private network (definition 1).

security \se-kyər´ə-tē`\ *n.* Protection of a computer system and its data from harm or loss. A major focus of computer security, especially on systems that are accessed by many people or through communications lines, is the prevention of system access by unauthorized individuals.

security kernel \se-kyər´ə-tē ker`nəl\ *n.* An operating-system kernel that is protected from unauthorized use. *See also* kernel.

security log \se-kyər´ə-tē log`\ *n.* A log, generated by a firewall or other security device, that lists events that could affect security, such as access attempts or commands, and the names of the users involved. *See also* firewall, log (definition 1).

seed \sēd\ *n.* A starting value used in generating a sequence of random or pseudorandom numbers. *See also* random number generation.

seek \sēk\ *n.* The process of moving the read/write head in a disk drive to the proper site, typically for a read or write operation.

seek time \sēk´ tīm\ *n.* The time required to move a disk drive's read/write head to a specific location on a disk. *See also* access time (definition 2).

segment \seg´mənt\ *n.* A section of a program that, when compiled, occupies a contiguous address space and that is usually position independent; that is, it can be loaded anywhere in memory. With Intel-based microcomputers, a native-mode segment is a logical reference to a 64-KB contiguous portion of RAM in which the individual bytes are accessed by means of an offset value. Collectively, the segment:offset values reference a single physical location in RAM. *See also* overlay[1] (definition 1), real mode, segmentation.

segmentation \seg`mən-tā´shən\ *n.* The act of breaking up a program into several sections, or segments. *See also* segment.

segmented addressing architecture \seg`men-təd a´dres-ēng är`kə-tek-chur, ə-dres´ēng\ *n.* A memory-access technique typified by Intel 80x86 processors. Memory is divided into 64-KB segments in this architecture for addressing locations under the 16-bit address scheme; 32-bit schemes can address memory in segments as large as 4 GB. *Also called* segmented instruction addressing, segmented memory architecture. *Compare* linear addressing architecture.

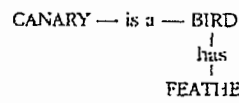
segmented address space \seg`men-təd a´dres spās`, ə-dres´\ *n.* An address space that is logically divided into chunks called segments. To address a given location, a program must specify both a segment and an offset within that segment. (The offset is a value that references a specific point within the segment, based on the beginning of the segment.) Because segments may overlap, addresses are not unique; there are many logical ways to access a given physical location. The Intel 80x86 real-mode architecture is segmented; most other microprocessor architectures are flat. *See also* segment. *Compare* flat address space.

segmented instruction addressing \seg`men-təd in-struk´shən ə-dres`ēng, a`dres-ēng\ *n.* *See* segmented addressing architecture.

segmented memory architecture \seg`men-təd mem-ər-ē är´kə-tek-chur\ *n.* *See* segmented addressing architecture.

select \sə-lekt´\ *vb.* **1.** In general computer use, to specify a block of data or text on screen by high-

semantics \sə-man´tiks\ *n.* **1.** In programming, the relationship between words or symbols and their intended meanings. Programming languages are subject to certain semantic rules; thus, a program statement can be syntactically correct but semantically incorrect; that is, a statement can be written in an acceptable form and still convey the wrong meaning. *See also* syntax. **2.** In artificial-intelligence research, the capacity of a network to represent relationships among objects, ideas, or situations in a humanlike way. See the illustration. *Compare* syntax.



Semantics.

semaphore \sem´ə-fōr´\ *n.* In programming, a signal—a flag variable—used to govern access to shared system resources. A semaphore indicates to other potential users that a file or other resource is in use and prevents access by more than one user. *See also* flag (definition 1).

semiconductor \sem´ē-kən-duk-tər, sem´ī-kən-duk-tər\ *n.* A substance, commonly silicon or germanium, whose ability to conduct electricity falls between that of a conductor and that of a nonconductor (insulator). The term is used loosely to refer to electronic components made from semiconductor materials.

send \send\ *n.* To transmit a message or file through a communications channel.

send statement \send´ stāt´mənt\ *n.* In SLIP and PPP scripting languages, a statement that tells the program that dials an Internet service provider's number (a *dialer program*) to send certain characters. *See also* ISP, PPP, scripting language, SLIP.

sensor \sen´sər\ *n.* A device that detects or measures something by converting nonelectrical energy to electrical energy. A photocell, for example, detects or measures light by converting it to electrical energy. *See also* transducer.

sensor glove \sen´sər gləv´\ *n.* A hand-worn computer input device for virtual-reality environments. The glove translates finger movements by the user to commands for manipulating objects in the environment. *Also called* data glove. *See also* virtual reality.

SEPP \S´E-P-P´\ *n.* Acronym for Software Engineering for Parallel Processing. A project of nine European universities and research institutions to develop tools for the development of parallel application programs for distributed memory multiprocessors.

sequence \sē´kwəns\ *n.* An ordered arrangement, as in a set of numbers, such as the Fibonacci sequence. *See also* Fibonacci numbers.

sequence check \sē´kwəns chek\ *n.* A process that verifies that data or records conform to a particular order. *Compare* completeness check, consistency check, duplication check.

Sequenced Packet Exchange \sē´kwensd pak´ət əks-chānj´\ *n. See* SPX (definition 1).

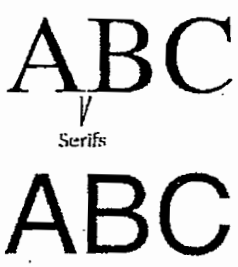
sequential access \si-kwen´shəl ak´ses\ *n.* A method of storing or retrieving information that requires the program to start reading at the beginning and continue until it finds the desired data. Sequential access is best used for files in which each piece of information is related to the information that comes before it, such as mailing list files and word processing documents. *Also called* serial access. *See also* indexed sequential access method. *Compare* random access.

sequential algorithm \si-kwen´shəl al´gə-ridh´əm\ *n.* An algorithm in which each step must occur in a particular order. *See also* algorithm. *Compare* parallel algorithm.

sequential execution \si-kwen´shəl eks´ə-kyōō´shən\ *n.* The act of executing routines or programs in a linear sequence. *Compare* concurrent execution.

sequential logic element \si-kwen´shəl loj´ik el´ə-mənt\ *n.* A logic circuit element that has at least one input and one output and in which the output signal depends on the present and past states of the input signal or signals.

sequential processing \si-kwen´shəl pros´es-ing\ *n.* **1.** The processing of items of information in the order in which they are stored or input. **2.** The execution of one instruction, routine, or task followed by the execution of the next in line. *Compare* multiprocessing, parallel processing, pipelining (definition 1).



Serif. ***A serif typeface (top) and a sans serif typeface (bottom).***

serif[2] \sâr´if\ *n.* Any of the short lines or ornaments at the ends of the strokes that form a typeface character.

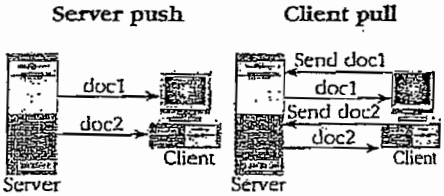
server \sər´vər\ *n.* **1.** On a local area network (LAN), a computer running administrative software that controls access to the network and its resources, such as printers and disk drives, and provides resources to computers functioning as workstations on the network. **2.** On the Internet or other network, a computer or program that responds to commands from a client. For example, a file server may contain an archive of data or program files; when a client submits a request for a file, the server transfers a copy of the file to the client. *See also* client/server architecture. *Compare* client (definition 3).

server-based application \sər´vər-bāsd a-plə-kā´-shən\ *n.* A program that is shared over a network. The program is stored on the network server and can be used at more than one client machine at a time.

server cluster \sər´vər klu`stər\ *n.* A group of independent computers that work together as a single system. A server cluster presents the appearance of a single server to a client.

server error \sər´vər âr`ər\ *n.* A failure to complete a request for information through HTTP that results from an error at the server rather than an error by the client or the user. Server errors are indicated by HTTP status codes beginning with 5. *See also* HTTP, HTTP status codes.

server push-pull \sər`vər pōōsh`pul´, pōōl´\ *n.* A combination of Web client/server techniques individually called "server push" and "client pull." In server push, the server loads data to the client, but the data connection stays open. This allows the server to continue sending data to the browser as necessary. In client pull, the server loads data to the client, but the data connection does not stay open. The server sends an HTML directive to the browser telling it to reopen the connection after a certain interval to get more data or possibly to open a new URL. See the illustration. *See also* HTML, server (definition 2), URL.



Server push-pull.

server-side includes \sər`vər-sīd in-klōōdz´\ *n.* A mechanism for including dynamic text in World Wide Web documents. Server-side includes are special command codes that are recognized and interpreted by the server; their output is placed in the document body before the document is sent to the browser. Server-side includes can be used, for example, to include the date/time stamp in the text of the file. *See also* server (definition 2).

service \sər´vəs\ *n.* **1.** A customer-based or user-oriented function, such as technical support or network provision. **2.** In reference to programming and software, a program or routine that provides support to other programs, particularly at a low (close to the hardware) level. *See also* utility.

Service Advertising Protocol \sər`vəs ad`vər-tī-zēng prō´tə-kol\ *n.* A method used by a service-providing node in a network (such as a file server or application server) to notify other nodes on the network that it *is* available for access. When a server boots, it uses the protocol to advertise its service; when the same server goes offline, it uses the protocol to announce that it is no longer available. *Acronym:* SAP (S`A-P´). *See also* server (definition 1).

service bureau \sər´vis byər`ō\ *n.* **1.** A company that provides various services related to publishing, such as prepress production, desktop pub-

with UNIX shell accounts, are likely to encounter status codes while using the Web or FTP. *See also* HTTP status codes.

step-frame \step´frām\ *n.* The process of capturing video images one frame at a time. This process is used by computers that are too slow to capture analog video images in real time.

stepper motor \step´ər mō´tər\ *n.* A mechanical device that rotates only a fixed distance each time it receives an electrical pulse.

step-rate time \step´rāt tīm´\ *n.* The time required to move a disk actuator arm from one track to the next. *See also* actuator, stepper motor.

StickyKeys \stik´ē-kēz´\ *n.* An accessibility feature built into Macintosh computers and available for Windows and DOS that causes modifier keys such as Shift, Control, or Alt to "stay on" after they are pressed, eliminating the need to press multiple keys simultaneously. This feature facilitates the use of modifier keys by users who are unable to hold down one key while pressing another.

stochastic \stə-kas´tik´\ *adj.* Based on random occurrences. For example, a stochastic model describes a system by taking into account chance events as well as planned events.

stop bit \stop´ bit\ *n.* In asynchronous transmission, a bit that signals the end of a character. In early electromechanical teleprinters, the stop bit provided time for the receiving mechanism to coast back to the idle position and, depending on the mechanism, had a duration of 1, 1.5, or 2 data bits. *See also* asynchronous transmission.

storage \stōr´əj\ *n.* In computing, any device in or on which information can be kept. Microcomputers have two main types of storage: random access memory (RAM) and disk drives and other external storage media. Other types of storage include read-only memory (ROM) and buffers.

storage device \stōr´əj də-vīs´\ *n.* An apparatus for recording computer data in permanent or semipermanent form. When a distinction is made between primary (main) storage devices and secondary (auxiliary) storage devices, the former refers to random access memory (RAM) and the latter refers to disk drives and other external devices.

storage location \stōr´əj lō-kā´shən\ *n.* The position at which a particular item can be found—either an addressed location or a uniquely identified location on a disk, tape, or similar medium.

storage media \stōr´əj mē´dē-ə\ *n.* The various types of physical material on which data bits are written and stored, such as floppy disks, hard disks, tape, and optical discs.

storage tube \stōr´əj tōōb´\ *n.* *See* direct view storage tube.

store-and-forward \stōr´and-fōr´wərd\ *n.* A message-passing technique used on communications networks in which a message is held temporarily at a collecting station before being forwarded to its destination.

stored program concept \stōrd prō´gram kon´sept\ *n.* A system architecture scheme, credited largely to the mathematician John von Neumann, in which both programs and data are in direct-access storage (random access memory, or RAM), thereby allowing code and data to be treated interchangeably. *See also* von Neumann architecture.

storefront \stōr´frənt\ *n.* *See* virtual storefront.

STP \S´T-P´\ *n.* Acronym for shielded twisted pair. A cable consisting of one or more twisted pairs of wires and a sheath of foil and copper braid. The twists protect the pairs from interference by each other, and the shielding protects the pairs from interference from outside. Therefore, STP cable can be used for high-speed transmission over long distances. *See also* twisted-pair cable. *Compare* UTP.

straight-line code \strāt´līn kōd´\ *n.* Program code that follows a direct sequence of statements rather than skipping ahead or jumping back via transfer statements such as GOTO and JUMP. *See also* GOTO statement, jump instruction. *Compare* spaghetti code.

stream cipher \strēm´ sī´fər\ *n.* A method for encrypting a data sequence of unlimited length using a key of fixed length. *See also* key (definition 3). *Compare* block cipher.

streaming \strē´mēng\ *n.* In magnetic tape storage devices, a low-cost technique to control the motion of the tape by removing tape buffers. Although streaming tape compromises start/stop performance, it achieves highly reliable storage and retrieval of data, and is useful when a steady supply of data is required by a particular application or computer.

symbol set \sim´bəl set´\ *n.* Any collection of symbols legitimized by a data-coding system, such as extended ASCII, or a programming language.

symbol table \sim´bəl tā´bl\ *n.* A list of all identifiers encountered when a program is compiled (or assembled), their locations in the program, and their attributes, such as variable, routine, and so on. *See also* compile, identifier, linker, module (definition 1), object code.

symlink \sim´lēnk\ *n. See* symbolic link.

symmetric digital subscriber line \si-me´trik dij´i-təl sub-skrī´bər līn\ *n.* A digital telecommunications technology that allows data transmission at speeds up to 384 Kbps in both directions through copper wire. *Acronym:* SDSL (S´D-S-L´). *Compare* asymmetric digital subscriber line.

symmetric multiprocessing \si-me´trik mul´tē-pros´es-ēng, mul´tī-pros´es-ēng\ *n. See* SMP.

symmetric multiprocessing server \si-me´trik mul-tē-pros´es-ēng sər´vər, mul-tī-pros´es-ēng\ *n. See* SMP server.

SYN \S´Y-N´\ *n.* Short for **sync**hronous idle character. A character used in synchronous (timed) communications that enables the sending and receiving devices to maintain the same timing. *Also called* sync character.

sync character \sēnk´ kar´ək-tər\ *n. See* SYN.

synchronization \sēn´krə-nə-zā´shən\ *n.* **1.** In networking, a communications transmission in which multibyte packets of data are sent and received at a fixed rate. *See also* packet (definition 1). **2.** In networking, the matching of timing between computers on the network. All of the computers are generally assigned identical times to facilitate and coordinate communications. **3.** In a computer, the matching of timing between components of the computer so that all are coordinated. For instance, operations performed by the operating system are generally synchronized with the signals of the machine's internal clock. *See also* clock (definition 1), operating system. **4.** In application or database files, version comparisons of copies of the files to ensure they contain the same data. **5.** In multimedia, precise real-time processing. Audio and video are transmitted over a network in synchronization so that they can be played back together without delayed responses. *See also* real-time.

synchronization signal \sēn´krə-nə-zā´shən sig´nəl\ *n. See* sync signal.

synchronize \sēn´krə-nīz´\ *vb.* To cause to occur at the same time.

Synchronous Data Link Control \sēn´krə-nəs da´tə lēnk kən-trōl´, dat´ə\ *n. See* SDLC.

synchronous DRAM \sēn´krə-nəs D´ram, D´R-A-M´\ *n.* A form of dynamic random access memory (DRAM) that can run at higher clock speeds than conventional DRAM by employing a bursting technique in which the DRAM predicts the address of the next memory location to be accessed. *Acronym:* SDRAM (S´D´ram, S´D-R-A-M´). *See also* dynamic RAM.

synchronous idle character \sēn´krə-nəs ī´dl kar´ək-tər\ *n. See* SYN.

synchronous operation \sēn´krə-nəs op-ər-ā´shən\ *n.* **1.** Any procedure under the control of a clock or timing mechanism. *Compare* asynchronous operation. **2.** In communications and bus operation, data transfer accompanied by clock pulses either embedded in the data stream or provided simultaneously on a separate line.

synchronous protocol \sēn´krə-nəs prō´tə-kol\ *n.* A set of guidelines developed to standardize synchronous communications between computers, usually based on either bit stream transmission or recognized character codes. Examples include the character-oriented binary synchronous (BISYNC) protocol and the bit-oriented High-level Data Link Control (HDLC) and Synchronous Data Link Control (SDLC) protocols. *See also* BISYNC, HDLC, SDLC.

synchronous transmission \sēn´krə-nəs tranz-mish´ən\ *n.* Data transfer in which information is transmitted in blocks (frames) of bits separated by equal time intervals. *Compare* asynchronous transmission.

synchronous UART \sēn´krə-nəs U´ārt, U´A-R-T´\ *n.* A universal asynchronous receiver/transmitter (UART) that supports synchronous serial transmission, where the sender and receiver share a timing signal. *See also* UART.

sync signal \sēnk´ sig´nəl\ *n.* Short for **synchronization signal**. The part of a raster-display video signal that denotes the end of each scan line (the horizontal sync signal) and the end of the last scan line (the vertical sync signal).

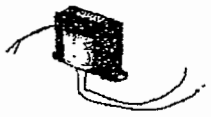
rate is measured in units of information per unit of time—for example, bits per second or characters per second—and can be measured either as a raw rate, which is the maximum transfer speed, or as an average rate, which includes gaps between blocks of data as part of the transmission time.

transfer statement \trans´fər stāt´mənt\ *n.* A statement in a programming language that transfers the flow of execution to another location in the program. *See also* branch instruction, CALL statement, GOTO statement, jump instruction.

transfer time \trans´fər tīm´\ *n.* The time elapsed between the start of a data transfer operation and its completion.

transform \trans-fōrm´\ *vb.* **1.** To change the appearance or format of data without altering its content; that is, to encode information according to predefined rules. **2.** In mathematics and computer graphics, to alter the position, size, or nature of an object by moving it to another location (translation), making it larger or smaller (scaling), turning it (rotation), changing its description from one type of coordinate system to another, and so on.

transformer \trans-fōr´mər\ *n.* A device used to change the voltage of an alternating current signal or to change the impedance of an alternating current circuit. See the illustration.



Transformer.

transient \tran´zhənt, tran´zē-ənt\ *adj.* **1.** Fleeting, temporary, or unpredictable. **2.** Of or pertaining to the region of memory used for programs, such as applications, that are read from disk storage and that reside in memory temporarily until they are replaced by other programs. In this context, *transient* can also refer to the programs themselves. **3.** In electronics, of or pertaining to a short-lived, abnormal, and unpredictable increase in power supply, such as a voltage spike or surge. *Transient time* is the interval during which a change in current or voltage is building up or decaying.

transient suppressor \tran´zhənt su-pres´ər, tran´zē-ənt\ *n.* A circuit designed to reduce or eliminate unwanted electrical signals or voltages.

transistor \tran´zi´stər\ *n.* Short for **transfer resistor.** A solid-state circuit component, usually with three leads, in which a voltage or a current controls the flow of another current. The transistor can serve many functions, including those of amplifier, switch, and oscillator, and is a fundamental component of almost all modern electronics. See the illustration on the next page. *See also* base (definition 3), FET, NPN transistor, PNP transistor.

transistor-transistor logic \tran-zi´stər-tran-zi´stər loj-ik\ *n.* A type of bipolar circuit design that utilizes transistors connected to each other either directly or through resistors. Transistor-transistor logic offers high speed and good noise immunity and is used in many digital circuits. A large number of transistor-transistor logic gates can be fabricated on a single integrated circuit. *Acronym:* TTL (T´T-L´).

translate \tranz´lāt\ *vb.* **1.** In programming, to convert a program from one language to another. Translation is performed by special programs such as compilers, assemblers, and interpreters. **2.** In computer graphics, to move an image in the "space" represented on the display, without turning (rotating) the image.

translated file \tranz´lā-təd fīl´\ *n.* A file containing data that has been changed from binary (8-bit) format to ASCII (7-bit) format. BinHex and uuencode both translate binary files into ASCII. Such translation is necessary to transmit data through systems (such as e-mail) that may not preserve the eighth bit of each byte. A translated file must be decoded to its binary form before being used. *See also* BinHex, uuencode.

translator \tranz´lā-tər\ *n.* A program that translates one language or data format into another.

transmission channel \tranz-mish´ən chan´əl\ *n. See* channel.

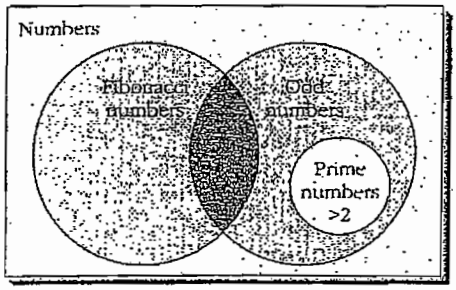
Transmission Control Protocol/Internet Protocol \tranz´mish´ən kən-trōl´ prō´tə-kol-in´tər-net prō´tə-kol\ *n. See* TCP/IP.

transmit \tranz-mit´\ *vb.* To send information over a communications line or a circuit. Computer transmissions can take place in the ways listed on the next page.

of lines rather than as patterns of individual dots or pixels. *Compare* raster graphics.

vector table \vek´tər tā´bl\ *n.* *See* dispatch table.

Venn diagram \ven´ dī´ə-gram\ *n.* A type of diagram, used to express the result of operations on sets, in which a rectangle represents the universe and circles inside the rectangle represent sets of objects. Relationships between sets are indicated by the positions of the circles in relation to one another. The Venn diagram is named after John Venn (1834–1923), an English logician at Cambridge University. See the illustration.



Venn diagram.

verbose \vər-bōs´\ *adj.* Displaying messages as English text rather than as concise (but cryptic) codes.

verify \vār´ə-fī\ *vb.* To confirm either that a result is correct or that a procedure or sequence of operations has been performed.

Veronica \Vər-on´ə-ka´\ *n.* Acronym for very easy rodent-oriented Netwide index to computerized archives. An Internet service developed at the University of Nevada that searches for Gopher archives by keywords. Users can enter Boolean operators, such as AND, OR, or XOR, to help narrow or expand their search. If any matching archives are found, they are listed on a new Gopher menu. *See also* Boolean operator, Gopher. *Compare* Archie, Jughead.

version \vər´zhən\ *n.* A particular issue or release of a hardware product or software title.

version control \vər´zhən kən-trōl´\ *n.* The process of maintaining a database of all the source code and related files in a software development project to keep track of changes made during the project.

version number \vər´zhən num´bər\ *n.* A number assigned by a software developer to identify a particular program at a particular stage, before and after public release. Successive public releases of a program are assigned increasingly higher numbers. Version numbers usually include decimal fractions. Major changes are generally marked by a change in the whole number, whereas for minor changes only the number after the decimal point increases.

verso \vər´sō\ *adj.* The publishing term for a left-hand page, which is always even-numbered. *Compare* recto.

vertical application \vər´tə-kəl a-plə-kā´shən\ *n.* A specialized application designed to meet the unique needs of a particular business or industry—for example, an application to keep track of billing, tips, and inventory in a restaurant.

vertical bandwidth \vər´tə-kəl band´width\ *n.* The rate at which a display screen is refreshed entirely, expressed in hertz (Hz). The vertical bandwidth of display systems ranges from 45 Hz to over 100 Hz. *Also called* vertical scan rate, vertical sync, V-sync.

vertical blanking interval \vər´tə-kəl blan´kēng in´tər-vəl\ *n.* The time required for the electron beam in a raster-scan display to perform a vertical retrace. *See also* blanking, vertical retrace.

vertical recording \vər´tə-kəl rə-kōr´dēng\ *n.* *See* perpendicular recording.

vertical redundancy check \vər´tə-kəl rə-dun´dən-sē chek´\ *n.* *See* VRC.

vertical retrace \vər´tə-kəl rē´trās\ *n.* On raster-scan displays, the movement of the electron beam from the lower right corner back to the upper left corner of the screen after the beam has completed a full sweep of the screen. *See also* blanking, vertical blanking interval. *Compare* horizontal retrace.

vertical scan rate \vər´tə-kəl skan´ rāt\ *n.* *See* vertical bandwidth.

vertical scrolling \vər´tə-kəl skrō´lēng\ *n.* Movement up or down in a displayed document. *See also* scroll bar.

vertical sync \vər´tə-kəl sēnk´\ *n.* *See* vertical bandwidth.